Vol. 1030 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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May 10, 1983 Volume 1030 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,164,409, Re. S.N. 469,563, Filed Feb. 23, 1983, Cl. 71/98, SUBSTITUTED PHENOXYBENZOIC ACIDS, COMPOSITIONS OF THE SAME AND HERBICIDAL USE THEREOF, Robert J. Theissen, Owner of Record: *Rhone-Poulenc Agrochimie, Lyon, France,* Attorney or Agent: Alfred P. Ewert, Ex. Gp.: 121

4,164,410, Re. S.N. 469,564, Filed Feb. 23, 1983, Cl. 71/91, ESTERS OF SUBSTITUTED PHENOXYBENZOIC ACIDS, COMPOSITIONS OF THE SAME AND HERBICIDAL USE THEREOF, Robert J. Theissen, Owner of Record: *Rhone-Poulenc Agrochimie, Lyon, France,* Attorney or Agent: Alfred P. Ewert, et al., Ex. Gp.: 121

4,252,361, Re. S.N. 469,068, Filed Feb. 23, 1983, Cl. 294/88, SINGLE GUIDE ROD ACTUATING UNIT, Claude Descoteaux, et al., Owner of Record: *State Die & Manufacturing, Inc., Roseville, Mich.,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 313

4,252,878, Re. S.N. 469,378, Filed Feb. 24, 1983, Cl. 429/250, PROCESSES OF WETTING HYDROPHOBIC FLUOROPOLYMER SEPARATORS, Christine A. Lazarz, et al., Owner of Record: *Occidental Chemical Corp., Niagara Falls, N.Y.,* Attorney or Agent: James F. Tao, et al., Ex. Gp.: 112

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Errata

In the notice of the issuance of Reexamination Certificate No. B1 3,598,122 (35th) appearing on page 69 of the Official Gazette of Nov. 23, 1982 (1024 OG 69), the assignment information is incorrect. The correct assignment information is as follows:

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corp., Palo Alto, Calif.

In the notice of the issuance of Reexamination Certificate No. B1 3,742,951 (36th) appearing on pages 69 and 70 of the Official Gazette of Nov. 23, 1982 (1024 OG 69-70), the assignment information is incorrect. The correct assignment information is as follows:

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corp., Palo Alto, Calif.

Errata

In the Official Gazette of Mar. 1, 1983, under "TRADEMARK REGISTRATIONS NEW CERTIFICATES," on page TM 153, the following registration should be deleted:

504,238. FREE SPIN GETS 'EM AND DESIGN. (U.S. Cl. 22). Mille Lacs Lake Spinner Co., Isle, Minn. Reg. 11-23-48. New Cert. Sec. 7(c) to Lindy-Little Joe, Inc., Isle, Minn.

The following should be inserted in its place:

504,238. FREE SPIN GETS 'EM AND DESIGN. (U.S. Cl. 22). Mille Lacs Lake Spinner Co., Isle, Minn. Reg. 11-23-48. New Cert. Sec. 7(c) to Lindy-Little Joe, Inc., Brainerd, Minn.

MARK M. NEWMAN,
Mar. 25, 1983. *Director, Trademark Examining Operation.*

The following registration numbers were inadvertently canceled in the "Trademarks Registrations Canceled, Section 8" section of the Official Gazettes listed below:

976,979	TM70	Aug. 12, 1980
1,001,000	TM147	June 2, 1981
1,001,363	TM149	June 2, 1981
1,040,544	TM597	Oct. 26, 1982
1,050,746	TM492	Mar. 15, 1983

Consequently, the above identified registrations are still active.

MARK M. NEWMAN,
Apr. 11, 1983. *Director, Trademark Examining Operation.*

PATENT NOTICES

Certificates of Correction for the Week of May 10, 1983

D. 265,552	4,331,786	4,352,087	4,367,735
D. 266,731	4,332,026	4,352,583	4,367,967
4,207,192	4,339,507	4,353,998	4,368,894
4,210,536	4,339,783	4,354,101	4,369,373
4,232,220	4,340,314	4,354,826	4,370,240
4,238,523	4,340,679	4,355,062	4,370,775
4,251,735	4,342,411	4,355,126	4,371,213
4,251,736	4,343,153	4,356,078	4,371,271
4,255,962	4,343,800	4,356,187	4,371,386
4,272,389	4,343,931	4,356,242	4,371,552
4,287,892	4,344,024	4,356,316	4,371,720
4,288,531	4,344,192	4,356,782	4,372,058
4,291,057	4,344,381	4,357,293	4,372,328
4,297,138	4,344,919	4,357,403	4,372,563
4,297,913	4,345,020	4,357,464	4,372,952
4,299,639	4,345,975	4,359,193	4,373,900
4,301,301	4,347,160	4,359,597	4,374,299
4,302,509	4,347,183	4,360,024	4,374,449
4,304,884	4,347,566	4,360,534	4,374,478
4,313,974	4,348,149	4,361,792	4,375,023
4,315,070	4,348,437	4,362,750	4,375,343
4,317,851	4,348,525	4,362,799	4,375,502
4,319,014	4,348,562	4,362,878	4,375,612
4,320,504	4,348,647	4,366,041	4,376,138
4,325,541	4,349,166	4,366,549	4,376,273
4,325,675	4,349,543	4,366,701	4,376,545
4,328,157	4,349,636	4,367,143	4,376,634
4,328,730	4,349,912	4,367,370	4,377,274
4,331,417	4,351,326	4,367,398	

Disclaimers

4,287,236.—*Mark O. Kestner,* Mendham; and *Stephen H. Stoldt,* Dover, N.J. METHOD OF IMPROVING THE FREEZE RESISTANCE OF PARTICULATE MATERIAL AT LOW TEMPERATURES. Patent dated Sept. 1, 1981. Disclaimer filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,238,203.—*Raymond Jaworowski,* Convent Station, N.J.; *Eric Darmstaedter,* Dallas, Tex.; *Cliff D. Barton,* Mountain Lakes, N.J.; and *William Taylor,* Tyler, Tex. METHOD OF ENHANCING THE EFFECTIVENESS OF ELECTROSTATIC PRECIPITATORS USED WITH GAS STREAMS FORMED FROM BURNING FUEL. Patent dated Dec. 9, 1980. Disclaimer filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,304,636.—*Mark O. Kestner,* Mendham; *Stanley E. Gilewicz,* West Orange; and *Mehmet E. Aktuna,* Morristown, N.J. METHOD FOR IMPROVING THE BULK DENSITY AND THROUGHPUT CHARACTERISTICS OF COKING COAL. Patent dated Dec. 8, 1981. Disclaimer filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,306,885.—*Alfred E. Kober,* Hopatcong; and *Ira Kukin,* West Orange, N.J. METHOD OF CONDITIONING FLUE GAS. Patent dated Dec. 22, 1981. Disclaimer filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,325,711.—*Alfred E. Kober,* Bridgewater; and *Dennis F. Mahoney,* Three Bridges, N.J. METHOD OF CONDITIONING FLUE GAS AND SEPARATING THE PARTICLES THEREFROM. Patent dated Apr. 20, 1982. Disclaimer filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 19, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-14-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-20-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-7-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-12-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	1-07-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-13-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-18-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-12-80

Expiration of patents: The patents within the range of numbers indicated below expire during February 1983, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,231,896 to 3,237,200, inclusive

Plant Patents ..... Numbers 2,591 to 2,605 inclusive

REISSUES

MAY 10, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

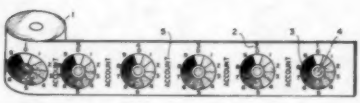
Re. 31,232
CALIBRATED OIL BURNER FILTER PAPER

Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777

Original No. 4,170,127, dated Oct. 9, 1979, Ser. No. 890,784, Mar. 27, 1978. Continuation-in-part of Ser. No. 714,951, Sep. 3, 1976, Pat. No. 4,095,729. Application for reissue Mar. 6, 1981, Ser. No. 241,138

Int. Cl.³ G01N *21/00*

U.S. Cl. 73—28 **6 Claims**



1. In a filter test paper or the like for use in a sampling and testing of the smoke of an oil burner and for [indicating] *determining* a "Smoke Spot Number" of the smoke content of flue gases when compared to standard gray smoke scales, the [imprint] *improvement* comprising: said [roll of] filter test paper provided with a plurality of evenly spaced repeating calibrated gray smoke scales, each of said gray scales having at least one form of preselected geometrical shapes, each of the gray scale shapes evenly divided into sectors of different "Smoke Spot Number" indicating density, said calibrated gray smoke scales located centrally on said test paper, whereby a sample test smoke spot will appear adjacent to a selected one of the calibrated gray smoke scales during the smoke test and "Smoke Spot Number" content of the flue gas can be visually determined by comparing the sample test smoke spot with said one of the *repeating* calibrated gray smoke scales.

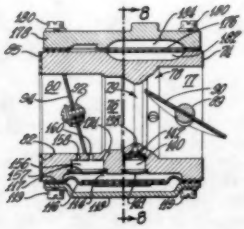
Re. 31,233
CHARGE FORMING METHOD AND APPARATUS WITH OVERSPEED GOVERNOR

Warren D. Nutten, Grafton, Wis., and Bernard C. Phillips, Toledo, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Original No. 3,738,608, dated Jun. 12, 1973, Ser. No. 74,812, Sep. 23, 1970. Division of Ser. No. 766,580, Oct. 10, 1968, abandoned. Application for reissue Oct. 19, 1979, Ser. No. 86,619

Int. Cl.³ F02D *9/00, 11/02*

U.S. Cl. 123—330 **7 Claims**



8. An overspeed governing valve assembly for an internal combustion engine, which valve assembly is responsive to engine vibrations to introduce additional fuel into the engine for engine speed control, and which assembly includes, in combination, a cylindrically-shaped housing defining a first chamber, a ball-shaped valve member in said chamber disposed for relative movement therein in either a transverse or lengthwise direction regardless of the housing position with respect to the engine, said housing defining a seat for the valve member, which seat defines a fuel port, spring means in the housing normally biasing the valve member to port-closing position, said housing defining a fuel chamber and a mixing passage, operation of the engine developing a pressure differential between the pressures in the fuel chamber and mixing passage, both of which pressures are below atmospheric pressure, said spring means in cooperation with said pressure differential combining to bias said ball-shaped valve member to the port-closing position, and said housing defining a fuel passage opening into the first chamber for admitting fuel into the first chamber, the mass of the valve member and the pressure of the spring means being calibrated to be responsive to a predetermined frequency of engine vibration to effect movement of the valve member at said predetermined frequency away from the port-closing position to permit fuel flow through said fuel port.

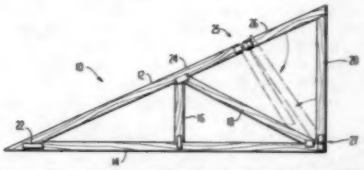
Re. 31,234
HINGED CONNECTOR PLATE

John C. Jureit, Coral Gables, Fla., and John M. Des Jardins, Columbiaville, Mich., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Original No. 3,823,522, dated Jul. 16, 1974, Ser. No. 303,939, Nov. 6, 1972. Application for reissue Jun. 14, 1978, Ser. No. 915,445

Int. Cl.³ E04B *1/32, 7/16*

U.S. Cl. 403—163 **3 Claims**



12. A structural device comprising first and second *elongated* wooden members, means for pivotally connecting said first and second wooden members *at their longitudinal ends* one to the other including first and second *elongated* sheet metal planar plates, each of said plates *being of a sufficient size so that its width covers a major portion of the width of the side face of the corresponding said wooden member and* having a plurality of teeth struck therefrom leaving a plurality of slots in said plate, an end portion of each said plate having an opening therethrough, said teeth being distributed over the major portions of the areas of said plates and spaced back from said end portions thereof, the teeth of said first plate being embedded into the side face of said first wooden member with the teeth of said second plate being embedded into the side face of said second wooden member with the plate end portions overlapping one another and the respective openings in the plate end portions registering one with the other, and means passing through at least one of said openings for pivotally connecting said first and second plates one to the other for *free* swinging movement of said first plate and said one member relative to said second plate and the second member, *after said first and second plates have been pivotally connected to each other and attached to said first and second wooden members, respectively,* the *longitudinal ends* faces [ends] of said first and second wooden members being spaced one from the other with the pivotal axis of the joint passing between the spaced [ends] *longitudinal end faces* of said first and second wooden members.

Re. 31,235

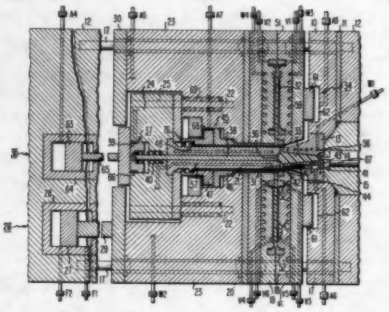
METHOD FOR PRODUCING INJECTION MOLDED AND CENTRALLY APERTURED DISC RECORDS

Michael L. McNeely, Indianapolis, Ind., and Herbert Rees, Willowdale, Canada, assignors to RCA Corporation, New York, N.Y.

Original No. 4,085,178, dated Apr. 18, 1978, Ser. No. 694,440, Jun. 9, 1976. Division of Ser. No. 642,162, Dec. 18, 1975, Pat. No. 3,989,436. Application for reissue Mar. 24, 1980, Ser. No. 133,252

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—106 6 Claims



1. A method for forming a disc record having an annular recorded region surrounding a centering aperture therein; said method comprising the steps of:

(A) injecting heated material into an annular cavity defined by a pair of mold halves through a sprue passage located at the center of said annular cavity and defined by a sprue bushing and an end portion of a punch; and said annular cavity and said sprue passage forming, respectively, said centrally apertured record and a sprue;

(B) locking said punch in place while said annular cavity is displaced relative to said sprue passage so that said sprue is severed from said record along the peripheral surface of said punch end portion;

(C) separating said mold halves to open said annular cavity while said sprue is resting on said punch end portion and while said record is held by said punch end peripheral surface;

(D) actuating a sprue ejector member to eject said sprue from said punch end portion; and

(E) actuating a record ejector member to eject said record from said punch peripheral surface.

Re. 31,236

METHOD OF REMOVING SULFUR DIOXIDE FROM COMBUSTION EXHAUST GAS

Shigeru Saitoh; Tetsuya Watanabe; Koji Konno; Kunihide Yaguchi; Kenji Kodama, and Tamostu Miyamori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

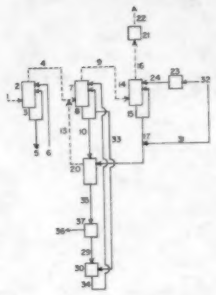
Original No. 3,928,537, dated Dec. 23, 1975, Ser. No. 440,381, Feb. 7, 1974. Application for reissue Apr. 2, 1980, Ser. No. 136,531

Claims priority, application Japan, Feb. 10, 1973, 48-16919

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—243 8 Claims

1. A method of removing sulfur dioxide from combustion exhaust gas containing said sulfur dioxide, comprising contacting said combustion exhaust gas with an aqueous solution containing at least one organic acid salt selected from the group consisting of alkali metal salts or ammonium salts of acetic acid, propionic acid and butyric acid to dissolve the sulfur dioxide contained in the combustion exhaust gas in the form of alkali sulfite and alkali sulfate in said aqueous solution and to generate organic acid in said aqueous solution, adding into the resultant solution which contains alkali sulfite, alkali sulfate and organic acid dissolved therein a calcium compound selected from the group consisting of calcium carbonate, calcium oxide, calcium hydroxide and calcium salt of an organic acid for reaction of said alkali sulfite and said alkali sulfate



contained in said solution with said calcium compound to produce calcium sulfite and calcium sulfate which precipitate in said solution resulting in formation of said organic acid salt in said solution, and recycling the organic acid saltcontaining solution obtained after separation of said calcium sulfite and said calcium sulfate for contact with said combustion exhaust gas.

Re. 31,237

2-BENZOYL-4-NITROANILIDES AND THEIR USE AS MEDICAMENTS

Henri Cousse, and Gilbert Mouzin, both of Castres, France, assignors to Pierre Fabre S.A., Paris, France

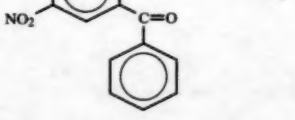
Original No. 4,289,770, dated Sep. 15, 1981, Ser. No. 159,070, Jun. 13, 1980. Application for reissue Feb. 19, 1982, Ser. No. 350,233

Claims priority, application France, Jun. 25, 1979, 79 16213

Int. Cl.³ A61K *31/535, 31/16;* C07C *103/183;* C07D *295/14*

U.S. Cl. 424—248.54 6 Claims

1. 2-benzoyl-4-nitro anilides having the formula I:



in which

R represents alkyl, alkenyl, cycloalkyl, or benzyl;

R_1 represents hydrogen, alkyl or hydroxyalkyl;

R_2 represents hydroxyalkyl, alkenyl or alkynyl, unsubstituted or substituted one or more times by an alkyl radical, or cycloalkyl having three to six carbon atoms, inclusive;

R_1 and R_2 may furthermore form, with the nitrogen atom to which they are attached, a nitrogen heterocycle which may also contain a second heteroatom selected from oxygen and nitrogen;

provided, however that, when R_2 represents hydroxyalkyl, R_1 may not be hydrogen, as well as their salts obtained with therapeutically acceptable inorganic or organic acids.

6. Method for the treatment of a subject suffering from

insomnia, comprising the step of administering to the said subject an effective hypnotic amount of a compound of claim 1 or 2.

Re. 31,238

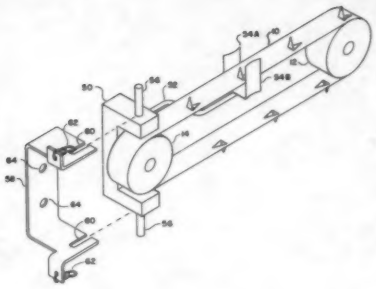
ELECTROGRAPHIC COPIER WITH ONE-PIECE BELT AND STYLI

Jon C. Mutton, Portland, and Peter J. Unger, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Original No. 4,148,042, dated Apr. 3, 1979, Ser. No. 850,529, Nov. 11, 1977. Application for reissue Nov. 13, 1979, Ser. No. 93,571

Int. Cl.³ G03G *15/02, 15/00*

U.S. Cl. 346—155 **17 Claims**



1. An electrographic copier, comprising:

an endless belt [means carried by rotatable members, said endless belt means including styli in the form of projecting pins and being formed] *of electrically conductive material having at least one stylus formed therein* from [selectively spaced,] *a* cut[,] and bent out, pointed [segments thereof] *segment of said material*;

an electrode disposed adjacent at least a portion of said endless belt [means] *and proximate said stylus, said electrode being spaced from said belt a distance sufficient to permit the contacting introduction of a sheet material between said electrode and said stylus*, said electrode including means responsive to a control signal for [causing] *permitting* an electric field to be effected between said electrode and said [styli] *stylus so as to develop in said sheet material an electrostatic charge pattern corresponding to said electric field*; and

[means for developing an electrostatic charge pattern corresponding to said electric field to produce a copy, said means being adapted to be moved orthogonal to an axis of rotation of said rotatable members and also being adapted to make contact with said electrode and at least one of said styli] *means for causing relative movement between said sheet material and said endless belt while maintaining one side of said sheet material in contact with said stylus and the other side of said sheet material in contact with said electrode.*

Re. 31,239

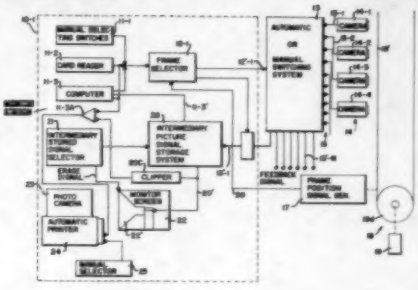
INFORMATION STORAGE AND REPRODUCTION SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Original No. 3,539,715, dated Nov. 10, 1970, Ser. No. 781,689, Nov. 21, 1968. Continuation of Ser. No. 347,999, Feb. 26, 1964, abandoned, which is a continuation-in-part of Ser. No. 515,417, Jun. 14, 1955, Pat. No. 3,003,109, Ser. No. 668,348, Jun. 27, 1957, Pat. No. 3,051,777, and Ser. No. 765,401, Oct. 6, 1958, abandoned. Application for reissue Aug. 20, 1979, Ser. No. 68,484

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—102 **48 Claims**



21. An information storage and reproduction system comprising in combination:

(a) an endless track conveyor having a plurality of tracks of image frame information provided thereon which frame information is scannable from at least one side of said conveyor,

(b) said image frame information being arranged as a plurality of rows of frames extending across said conveyor,

(c) a plurality of video scanners arranged in a lateral row extending across said conveyor with each scanner of said row positioned whereby a respective of said tracks will pass through the scanning field of said scanner,

(d) automatically operative means for intermittently moving said conveyor in a manner whereby when said conveyor is stopped, respective frames of a row are each aligned in the scanning field of a respective of said scanners and each frame remains in scanning relationship with its scanner for a sufficient period of time to permit the scanning means to scan said respective fields and to each produce a respective picture signal on the outputs of said [cameras] *scanners*,

(e) a switching system,

(f) a plurality of monitor stations each having signal input means operatively connectable to the output of one of said scanners through said switching system,

(g) selection means for each of said monitor stations operative to gate thereto through said switching system picture signals derived from a selected of said scanners generated in scanning selected of the image frames passing through its scanning field.

PLANT PATENTS

GRANTED MAY 10, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,049

ROSE PLANT

Fred A. Mungia, Sr., P.O. Box 338, McFarland, Calif. 93250

Filed Nov. 12, 1981, Ser. No. 320,720

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—2 **1 Claim**

1. A new and distinct variety of rose plant of the climbing hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to its parent variety, "Blue Moon", but different therefrom by its pronounced climbing growth habit.

5,050

APPLE TREE

Annette Barr, Yakima, Wash., assignor to McCormick Fruit Tree Co., Inc., Yakima, Wash.

Filed Sep. 2, 1981, Ser. No. 298,901

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree substantially as herein shown and described, characterized particularly as to novelty by the unique combination of attractive appearance in color and shape which closely resembles Starking Delicious (unpatented), while having the flavor and texture of Jonathan, as well as tree shape and size of Jonathan, improved sugar content, excellent keeping qualities, and good resistance to disease and mildew.

5,051

PLUM TREE

Buell K. Stephens, 19884 Avenue 324, Woodlake, Calif. 93286

Filed Nov. 2, 1981, Ser. No. 317,308

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described, and characterized by trees, leaves, and fruit which are substantially identical to those of the Santa Rosa (unpatented) plum tree, but distinguished therefrom and characterized as to novelty by fruit which ripens from two to three weeks earlier than the Santa Rosa.

5,052

CHRYSANTHEMUM NAMED SUNLIGHT

Kerry S. Petusky, 28 W 748 Barnes Ave., West Chicago, Ill. 60185

Filed Oct. 28, 1981, Ser. No. 315,914

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinctive cultivar of chrysanthemum, substantially and herein shown and described, particularly characterized by its single flower form, medium flower size, yellow coloration of the ray florets, greenish-yellow coloration of the disc florets, very floriferous habit and its applicability for four and six-inch pot production.

PATENTS

GRANTED MAY 10, 1983

ERRATA

For CLASS	See PATENT NO.
228–103	4,382,322
604–291	4,382,441
604–028	4,382,442
604–396	4,382,443
604–008	4,382,445
445–069	4,382,645
445–041	4,382,646
106–130	4,382,724
424–365	4,382,765
419–011	4,382,818
525–486	4,383,073
377–020	4,383,166
377–002	4,383,167
377–057	4,383,187

PATENTS

GRANTED MAY 10, 1983

GENERAL AND MECHANICAL

4,382,301
SNAKE PROOF CHAPS
George H. Hightower, Jr., Thomaston, Ga., assignor to Thomaston Mills Inc., Thomaston, Ga.
Filed Jun. 12, 1981, Ser. No. 273,067
Int. Cl.[3] A41D *13/06*; F41H *1/02*
U.S. Cl. 2—22 **10 Claims**

1. A protective article of clothing adapted to prevent snake fangs from biting into the leg of a wearer, said protective article comprising:

(a) a generally tubular leg enclosing portion made of a woven fabric of nylon resistant to snake bites and having an upper part and a lower part, said lower part including a fastener for connecting two side edges of the lower part, and

(b) a securing piece attached to said upper part for holding the leg enclosing portion up on a wearer's leg, and

wherein said leg enclosing portion comprises a basket weave fabric, said basket weave fabric comprises nylon fiber in the form of continuous filament yarn, said basket weave fabric is made of threads between 900 and 1100 denier and weighs between 8.0 and 12.0 ounces per square yard.

4,382,302
WEIGHTED TRAINING VEST HAVING CONSTANT WEIGHT DISTRIBUTION
Douglas E. Watson, 3665 SE. Monroe St., Apt. #8, Milwaukie, Oreg. 97222
Filed Mar. 30, 1981, Ser. No. 249,171
Int. Cl.[3] A41D *1/04*; A63B *21/12*
U.S. Cl. 2—102 **9 Claims**

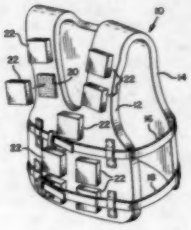
1. An athletic training vest device adapted to be worn upon an athlete's torso while running, said device comprising:

(a) respective front and rear flexible panels adapted to fit against the wearer's chest and back respectively;

(b) interconnecting means extending between said front and rear panels for holding said panels snugly in contact with the wearer's chest and back respectively;

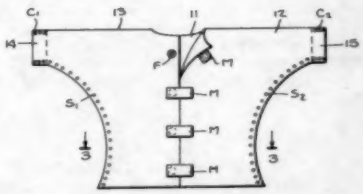
(c) a first plurality of weights affixed to said front panel at respective locations spaced apart from one another by respective predetermined distances and having a total weight greater than that of said front panel, and a second plurality of weights affixed to said rear panel at respective locations spaced apart from one another by respective predetermined distances and having a total weight greater than that of said rear panel;

(d) each of said flexible panels including rigidifying means other than said interconnecting means for maintaining the respective predetermined distances between the weights



on the respectve panel substantially constant while the wearer of the training vest device is in the act of running, said rigidifying means comprising substantially rigid material extending between the weights on the respective panel and capable of resisting dynamic movement of the weights with respect to one another.

4,382,303
NON-WOVEN POLYESTER WEARING APPAREL
Audrey T. Lunt, 6371 Vermont Hill Rd., South Wales, N.Y. 14139
Continuation-in-part of Ser. No. 760,169, Jan. 17, 1977, abandoned. This application Jul. 12, 1977, Ser. No. 814,915
Int. Cl.[3] A41B *13/06*; A41D *11/00, 13/12*
U.S. Cl. 2—114 **2 Claims**



1. A basic garment suitable for use as a medical examination gown or for other purposes calling for apparel which may be quickly opened to fully expose the body of the wearer, said garment being fabricated of a single blank of non-woven synthetic fiber material formed of sterilizable polyester sheeting contoured to define front and rear sections having complementary sleeve portions, with a fold line therebetween in the center of which is a neck opening, said front section being slit along a line extending from the neck opening to the lower end of the front section to define a pair of panels in edge-abutting relation that separate at the neck opening, the rear section being folded behind the front section and the two sections being ultrasonically welded together at their opposing side margins, and a plurality of hook and loop fabric fasteners whose male components are ultrasonically bonded to the margins of one panel at spaced positions therealong, the male components overlapping the edge of said one panel, and whose female components are ultrasonically bonded to the margin of the other panel at corresponding spaced positions at which the female components are engageable by the overlapping male components, whereby the

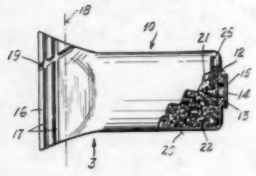
panels may be opened to expose the body of the wearer or closed to protect the body, said fastener components being formed of nylon, and at least one of said components being ultrasonically bonded to said polyester through an intermediate polyester web having a heat-activatable adhesive layer in contact with the nylon component whereby when ultrasonic energy is applied, the polyester web is fused to the polyester sheeting and the adhesive is activated to effect an adhesive bond between the web and the nylon component.

4,382,304

DEVICE FOR AUTOMATICALLY MAINTAINING TOILETS CLEAN

Herbert G. Lehmann, 5 Kent Rd., Easton, Conn. 06612

Filed Dec. 28, 1981, Ser. No. 334,914
Int. Cl.³ E03D 9/02; A61L 2/16
U.S. Cl. 4—228 **29 Claims**



1. As a new article of manufacture, a device for maintaining toilets in a sanitary condition, said device being adapted to become completely disintegrated after immersion for an extended period of time in water, and said device comprising, in combination:

(a) a quantity of dry granules characterized by a corrosive and bleaching action when combined with water, and

(b) a container for said granules, having means providing for the passage of fluid between its inside and its outside when the container is immersed in water,

(c) said container being constituted of a material which slowly disintegrates when in an aqueous solution of said granules,

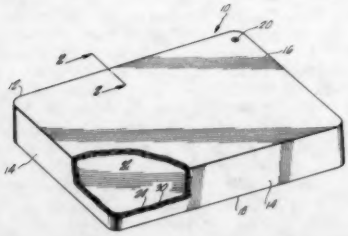
(d) all the walls of said container being gradually eaten away when the container is placed in a body of water which wets said granules, and when the container is allowed to remain in said body of water over an extended period of time.

4,382,305

SELF-SEALING WATERBED MATTRESS

Charles P. Hall, Muir Beach, and Joseph Philipson, Pasadena, both of Calif., assignors to Monterey Manufacturing Company, Los Angeles, Calif.

Filed Mar. 27, 1980, Ser. No. 134,628
Int. Cl.³ A47C 27/08
U.S. Cl. 5—451 **19 Claims**



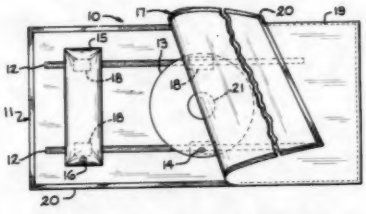
1. A self-sealing waterbed mattress comprising a polymeric, puncturable envelope and an internal layer of viscous, water-resistant, sealing material comprising polybutene for sealing leaks in the envelope, the sealing material having a sufficiently high viscosity at 110° F. that it does not flow through a puncture in the envelope and a sufficiently low viscosity at 60° F. that it can flow into a puncture in the envelope and seal the envelope against water leaks through the puncture.

4,382,306

PRENATAL MATTRESS

Jodey J. Lickert, 4632 Harford Rd., Toledo, Ohio 43612

Filed Sep. 18, 1981, Ser. No. 303,536
Int. Cl.³ A47C 27/08; A47G 9/00
U.S. Cl. 5—465 **8 Claims**



1. A prenatal mattress for supporting the head, abdomen and other portions of the body of a pregnant user lying frontally downwardly thereupon, comprising:

(a) an upper layer comprising a longitudinally-extending sheet of flexible material having substantially upper and lower planar surfaces and opposed ends;

(b) a lower layer comprising a longitudinally-extending sheet of flexible material having substantially upper and lower planar surfaces and opposed ends, said lower layer being securely attached to said upper layer along one end of each of said layers;

(c) a first substantially ring-shaped resilient cushion, said first cushion having a substantially circular center hole and being disposed between said first and second layers in a suitable location for providing support for the abdomen of the user;

(d) a second resilient cushion disposed between said first and second layers and located in a substantially horizontal plane axially of said first cushion in a suitable location for providing support for the head of the user;

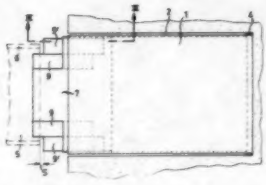
(e) releasable fastening means carried by a portion of the lower surface of said upper layer along adjacent edges thereof;

(f) releasable fastening means carried by a portion of the upper surface of said lower layer along adjacent edges thereof and located so as to be operable to releasably engage said fastening means carried by said upper layer when the lower surface of said upper layer is brought into contact with the upper surface of said lower layer, thereby to join said layers so that said cushions are disposed between said joined layers;

(g) additional releasable fastening means carried by the upper surface of said lower layer; and

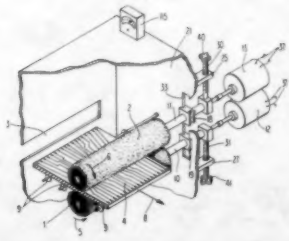
(h) releasable fastening means carried by each of said cushions and operable to releasably engage said additional fastening means carried by said lower layer, thereby to secure said cushions between said layers in their respective suitable locations.

4,382,307
TRANSFER BRIDGE
Kurt Alten, Ringstr. 14, D-3015 Wennigsen, Fed. Rep. of Germany
Filed Mar. 16, 1981, Ser. No. 243,713
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010209
Int. Cl.³ E01D 1/00
U.S. Cl. 14—71.7 10 Claims



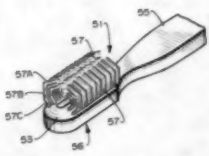
1. A transfer bridge for use between a ramp and a platform traversible by a vehicle, said bridge comprising:
a bridge plate having a first end and a second end, said first end being pivotably connected to said ramp in such a way as to be pivotable about a horizontal axis;
a retractable and extendable extension provided in said second end of said bridge plate for placement on said platform;
arresting means actuatable in response to a pushing-in movement of said extension held thereby in a pushed-in position;
tongues supported by and extending from said extension, and capable of being respectively pushed-in, i.e., of being pushed toward said first end of said bridge plate, said tongues, in the pushed-in state, being automatically arrested in position by said arresting means; and
drive means associated with one of said extension and said tongues for retracting same, subsequent to a pushing-in of said tongues, to form a gap between said pushed-in tongues and said platform rather than moving said tongues against a vehicle.

4,382,308
SCRUBBING TORQUE MONITORING AND CONTROL SYSTEM
Joseph J. Curcio, State College, Pa., assignor to Chemcut Corporation, State College, Pa.
Filed Feb. 18, 1981, Ser. No. 235,512
Int. Cl.³ A46B 13/02
U.S. Cl. 15—77 20 Claims



1. Apparatus for brushing a substantially flat article comprising:
means for conveying the article along a path,
rotatable brush means, positioned to brush the article as the article travels along the path,
alternating current motor means for rotating the brush means,
electronic sensing means directly responsive to the resistive component of the current through the motor, the sensing means comprising means for monitoring and continuously measuring the torque of the motor, and
means for moving the brush means towards or away from the article in response to output of the sensing means,
wherein the sensing means comprises:
means for sampling the current through, and the voltage across, the motor, the sampling means being electrically connected to the motor,
means for multiplying the current and voltage measured by the sampling means, the multiplying means being electrically connected to the sampling means,
means for integrating the output signal of the multiplying means, the integrating means being electrically connected to the multiplying means, and
means, electrically connected to the integrating means, for indicating the value of the output of the integrating means.

4,382,309
TOOTHBRUSH
George C. Collis, 313 W. 48th St., Minneapolis, Minn. 55407
Filed Aug. 5, 1980, Ser. No. 175,424
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 A 7 Claims

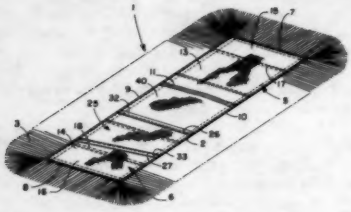


6. A toothbrush for simultaneously brushing the bucaal and lingual surfaces of the teeth in one brushing operation comprising:
a. an elongated handle
b. a bristle mounting head formed as a planar continuation of said handle,
c. a plurality of cleaning bristles, having distal and proximal ends, and an intermediate portion, said bristles being arranged in two longitudinal spaced parallel rows both of which rows run parallel to the length of the handle, the proximal ends of said bristles being disposed in said head whereby said bristles extend from said head;
the proximal ends of said bristles extending angularly outward from said head, the intermediate portion of said bristles being vertically disposed, and the distal ends of said bristles being directed angularly inwardly toward the space therebetween.

4,382,310
DUST MOP WITH IMPROVED BACKING
Anna M. Moss, Cleveland, Tenn., assignor to SECO Industries, Inc., Cleveland, Tenn.
Filed Sep. 30, 1981, Ser. No. 307,184
Int. Cl.³ A47L 13/253
U.S. Cl. 15—229 BP 10 Claims

1. A dust mop comprising a backing having a plurality of yarns secured to one face thereof, the other face of said backing having oppositely facing pockets adjacent the ends thereof, one of said pockets being substantially shorter than the other pocket, said pockets being open at their inner ends for receipt of the ends of either a slip-through or breakdown-type mop frame, and a cross member secured to said other face of said backing along opposite sides thereof intermediate said pockets,

said cross member being open at opposite ends thereof, the outer end of said cross member overlying the open inner end of said smaller pocket, and the inner ends of said cross member



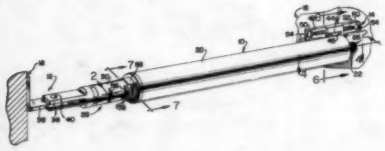
and larger pocket being generally equally spaced from the transverse center of said backing a sufficient distance to permit insertion of the folded ends of a breakdown frame therein.

4,382,311

DOOR-CLOSURE APPARATUS

John R. Watts, 8 Palmer St., South Melbourne, Australia (3186)

Filed Nov. 20, 1980, Ser. No. 208,676
Int. Cl.³ E05F 3/10
U.S. Cl. 16—66 **7 Claims**



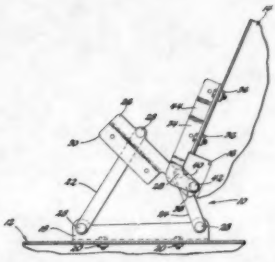
1. A pneumatic door-closure apparatus comprising:
an elongated tubular cylinder defining a housing having a closed end wall and an open end;
a collar member affixed within said open end of said housing;
an elongated rod slidably positioned in said housing and extending outwardly through said collar member;
a piston integrally formed with said rod at one end thereof;
a pressure chamber defined between said piston and said closed end wall of said housing;
an attaching means adapted at the opposite end of said rod;
an air-flow-control means included in said piston to allow air to flow around said piston when said rod is extended outwardly of said housing, and to compress air within said housing when said rod is retracted in said housing;
biasing means interposed between said collar and said piston, to bias said rod inwardly thereof;
a plurality of equally spaced grooves positioned transversely along said rod, wherein said grooves are formed in pairs, said pairs of grooves being oppositely disposed from each other;
a retainer clamp, including a pair of oppositely disposed rib members adapted to be engageably received in a corresponding pair of grooves, whereby said clamp can be adjustably positioned in a retracted position;
a pressure-release-valve means disposed within said closed end wall of said housing, whereby the retracting movement of said rod is controlled; and
a rear attaching means formed on said housing for attaching said housing to a selected structure.

4,382,312

MULTIPOSITION HOOD HINGE MECHANISM

Allen C. Liggett, Royal Oak, and Nicholas Toruk, West Bloomfield Township, Oakland County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 5, 1981, Ser. No. 270,611
Int. Cl.³ E05D 3/06
U.S. Cl. 16—365 **2 Claims**



1. A multiposition hinge mechanism for mounting an alligator-type hood to a vehicle for movement between closed and multiple open positions with respect to a vehicle compartment, comprising,
a lower vehicle mounted hinge member,
an upper hinge member,
means interconnecting the lower and upper members for relative movement between a closed position and a first open position,
a third hinge member,
means pivotably mounting the third hinge member to the upper hinge member for movement relative thereto,
means mounting the third hinge member to the vehicle hood,
releasable means directly securing the third hinge member to the upper hinge member for concurrent movement of the upper hinge member, third hinge member, and hood as a unit relative to the lower hinge member and compartment between a closed position and a first open position wherein the hood partially blocks the vehicle compartment, removal of the releasable securing means allowing the third hinge member and hood to move relative to the upper hinge member to a plurality of additional open positions with respect to the vehicle to obtain full access to the vehicle compartment.

4,382,313

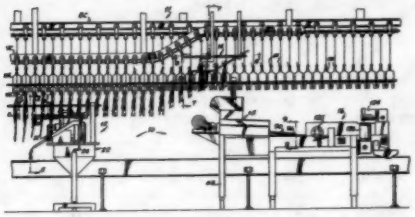
GIZZARD HARVESTING MACHINE

Grover S. Harben, Jr.; James S. Ellis, and Joe M. Emmett, all of Gainesville, Ga., assignors to Centennial Machine Co., Inc., Gainesville, Ga.

Filed Aug. 19, 1980, Ser. No. 179,516
Int. Cl.³ A22C 21/00
U.S. Cl. 17—11 **12 Claims**

1. Apparatus for separating poultry gizzards from the tender lining section as well as the food intake and digestive portions of the gastrointestinal tract naturally connected to the gizzard through the tender lining section comprising:
a pair of rotatably mounted viscera removal rolls having infeed and discharge ends, each of said viscera removing rolls including an infeed portion adjacent the infeed end thereof, a discharge portion adjacent the discharge end thereof and a tapered portion connecting said infeed and discharge portions, each of said infeed, discharge and tapered portions defining a plurality of helical teeth thereon, said infeed portion having a first thread crest diameter, said discharge portion having a second thread crest diameter larger than said first thread crest diameter, and said tapered portion having a thread crest diameter

which increases from said first thread crest diameter at said infeed portion to said second thread crest diameter at said discharge portion; said viscera removal rolls arranged in a side-by-side relationship with said infeed, discharge and tapered portions of each of said rolls laterally aligned with the corresponding infeed, discharge and tapered portions of the other of said rolls so that said helical teeth on said discharge portions of said rolls drivingly intermesh with each other to drivingly rotate one of said rolls when the other of said rolls is rotated and so that an elongate viscera receiving space is defined between said infeed portions of said removal rolls sized to permit the food intake and digestive portions of the gastrointestinal tract as well as the tender lining portion on the gizzard to pass therethrough but to prevent the gizzard from passing therethrough, said teeth on said infeed portions of said removal rolls arranged to pull the food intake and digestive portions through said viscera receiving space, to pull the tender lining section into said viscera receiving space until restrained by the gizzard engaging said infeed portions of said removal rolls without separating the food intake and digestive portions from the tender lining section, and to propel the gizzard with the tender lining section, food intake portion and digestive portion still attached to said tapered portion as said removal rolls are rotated, said teeth on said tapered portion arranged to engage the tender lining section on the gizzard between the gizzard and the food intake and digestive portions of the gastrointestinal tract and propel the gizzard toward said discharge portions of said removal rolls whereby the intermeshing of said teeth on said discharge portions of said removal rolls sever the tender lining from the gizzard along the juncture between the gizzard and the tender lining; and



drive means for rotating said viscera removal rolls so that, when the gizzard with the other viscera attached thereto is placed onto said rolls adjacent the intake ends thereof, the other viscera will be forced through said viscera receiving space between said rolls, the tender lining section will be forced into said viscera receiving space and said teeth on said rolls will move the gizzard from the infeed end toward the discharge end of said rolls whereby said rolls will separate the tender lining and other viscera from the gizzard.

4,382,314

POULTRY EVISCERATOR WITH MOVABLE WORK CYLINDER

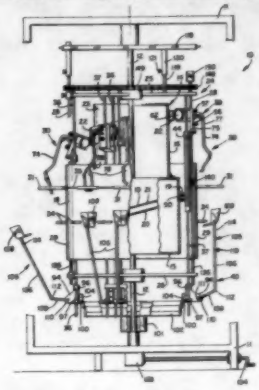
Kenneth Z. Graham, Rte. 2, Dawsonville, Ga. 30534

Filed Mar. 9, 1981, Ser. No. 241,834

Int. Cl.³ A22C *21/06*

U.S. Cl. 17—11 **10 Claims**

1. In apparatus for eviscerating poultry including a vertical axle, at least one support disc coaxially mounted on said axle, a plurality of guide rods mounted on said support disc and arranged vertically in a circular array, a work cylinder supported by said support disc and extending coaxially with respect to said guide rods, said work cylinder including at circumferentially spaced intervals thereabout poultry guide elements for guiding poultry to and maintaining poultry in predetermined positions about said work cylinder, eviscerator tools mounted on and movable along the lengths of said guide rods and movable with respect to the outer surface of said work cylinder and its poultry guide elements, and means for rotating said support disc, guide rods and work cylinder in unison about said vertical axle, the improvement therein of means for progressively raising and for progressively lowering said work cylinder and its poultry guide elements with respect to said guide rods and eviscerator tools as the work cylinder rotates about the vertical axle whereby the distances between the poultry guide elements and the eviscerator tools can be adjusted as birds are being eviscerated.



4,382,315

APPARATUS FOR OPENING BALES OF FIBER

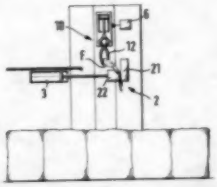
Georg Goldammer, Gaimersheim, and Günter Mahrt, Ingolstadt, both of Fed. Rep. of Germany, assignors to Schubert & Salzer, Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,133

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939899

Int. Cl.³ D01G *7/06*

U.S. Cl. 19—81 **6 Claims**



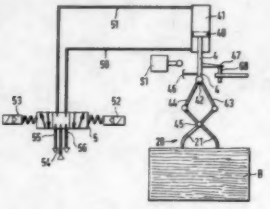
1. An apparatus for opening a bale of fibers with a gripper device which is moved from above said bale to detach fiber material from the top of said bale, and raising said detached fiber material with a web of fibers hanging down therefrom comprising:

a hold-back means (2) for grasping said web of fibers hanging down from said gripper device (10) after said gripper device has raised said detached fiber material from said bale.

4,382,316
METHOD AND APPARATUS FOR OPENING AND MIXING FIBER BALES

Georg Goldammer, Gaimersheim; Gunter Mahrt, and Joachim Dammig, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,162
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939890
Int. Cl.³ D01G 7/06
U.S. Cl. 19—81 6 Claims



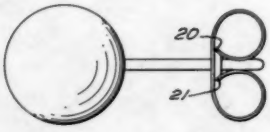
1. An apparatus for mixing fiber bales in accordance with predetermined proportions in a mixture wherein fiber material is removed from the bales with tongslike gripping means and deposited in a receiving container, and measuring means and a control means are provided for controlling the width of opening of the gripping means comprising:

said control means reducing the width of opening of said gripping means (20) from a wide width to a smaller width opening for removing said fibers from said bale in a smaller amount upon the desired weight of fibers less an initial pickup weight of fibers being removed from said bale.

4,382,317
PIN STEM CLUTCH

Thomas J. McDonald, Attleboro, and Robert E. Chatel, Wellesley, both of Mass., assignors to Leach & Garner Company, Attleboro, Mass.

Filed Sep. 10, 1981, Ser. No. 300,808
Int. Cl.³ A44C 7/00
U.S. Cl. 24—155 BB 2 Claims

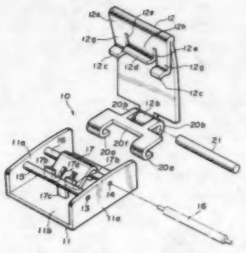


1. A pin stem clutch for detachable securement to a post comprising a base body member having a central pin receiving aperture and having upwardly turned integral ends, said ends bent in respective arcs toward each other, the terminal portion of each arc secured to the body member at the end of the arc on its side of the aperture so that a smoothly curved loop is formed at each side of the aperture, whereby for each loop the entire arc on opposite sides of diametrically opposite portions enters into the resilient action of gripping of a pin by reason of the transfer of the pin pressure across the arc and the flexing of opposite sides of the arc.

4,382,318
BUCKLES

Yoshimi Takimoto, Tokyo, Japan, assignor to Yoshimi Mfg., Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,812
Claims priority, application Japan, May 13, 1980, 55-65258[U]; Jul. 31, 1980, 55-108620[U]
Int. Cl.³ A44B 11/25
U.S. Cl. 24—188 4 Claims



1. A buckle for connecting the opposite ends of a strap together, one of the ends having a plurality of longitudinally spaced apertures, said buckle comprising:

(a) a base member;

(b) a cover member lockingly engageable with said base member to cover the same, said cover member being adapted to be attached to the other end of the strap; and

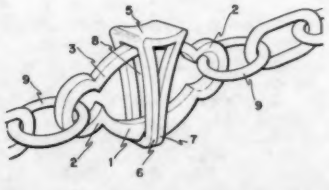
(c) a lock tongue on said base member adapted to be selectively inserted into one of the apertures for retaining the one end of the strap against movement;

said cover member being engageable at one end with said base member for pivotal movement toward and away from said base member, said cover having at the other end a lock means lockingly engageable with said base member, said base member being of a channel-shaped cross-section defined by a pair of arms and a bottom portion interconnecting said arms at their one ends, said lock means comprising a pair of side lugs and an intermediate lug disposed therebetween out of registry with said side lugs, said base member having a retaining pin and a mounting pin journalled in said arms, said pins being spaced along the length of the strap, said side lugs and intermediate lug being lockingly engageable with said retaining pin, and said cover member being engageable at the one end with said mounting pin.

4,382,319
LINK FOR JEWELLERY

Luis Mones Mendoza, Guillermo Tell, 47, Barcelona 6, Spain

Filed Feb. 5, 1981, Ser. No. 231,624
Claims priority, application Spain, Apr. 30, 1980, 250.387
Int. Cl.³ A44B 13/00
U.S. Cl. 24—376 5 Claims



1. A link device for use in securely connecting end rings of

an article of jewelry such as a necklace, said link device comprising:

an integral hook member including a curved leaf spring portion having opposite ends integral with first ends of respective outwardly extending semi-circular portions, second ends of said semi-circular portions having extending therefrom respective integral arms forming semi-leaf spring portions having a curvature opposite to that of said leaf spring portion, said semi-leaf spring portions having confronting ends separated by a clearance, said leaf spring portion having a middle section having a thickness greater than that of said opposite ends, and said middle section having formed therein a notch;

a catch member in the form of a ring having therethrough an opening through which extends said hook member, said catch member having a first portion fitting in said notch and a second portion opposite said first portion; and

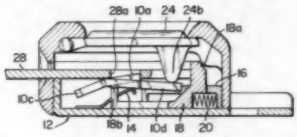
said catch member being pivotable with respect to said hook member about said first portion within said notch between an intermediate position, whereat said second portion exteriorly closes said clearance, and opposite lateral positions, whereat said second portion opens said clearance and is retained on a respective said semi-leaf spring portion.

4,382,320

SEAT BELT BUCKLE

Mitsuzi Yamamura, Hamamatsu, Japan, assignor to Fuji Kiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,887
Claims priority, application Japan, Sep. 2, 1980, 55-124942[U]
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—230 A **3 Claims**



1. A seat belt buckle comprising:

a base member adapted to connect to one end of a seat belt, having an opening at the front end thereof, for passing a tongue connected to another end of a seat belt therethrough;

a latch member rotatably provided within said base member, said latch member including an engagement portion formed substantially at the center thereof, wing-shaped pivot portions at each side, a front trapezoidal portion, and a rear projecting portion;

a spring member provided between said base member and said latch member so as to urge said latch member upwards;

a casing for covering said base member, formed with a front opening for passing the tongue therethrough and a top opening;

a releasing plate rotatably provided within said casing and always urged by means of a spring, said releasing plate formed with an actuating portion to press down said latch member;

a holding member secured on said base member, said holding member formed with a guide opening; and,

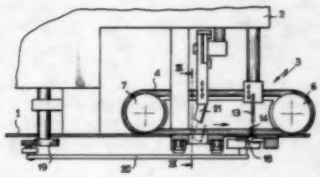
a slider integrally formed with a projecting head portion adapted to engage with said guide opening and a supporting means at the front of said slider, said slider being arranged within said holding member and urged forwardly by means of a spring which is disposed between said holding member and the rear surface of said slider so that said slider is normally located at the front end of said holding member and said supporting means contacts the under surface of said trapezoidal portion of said latch member when the tongue is not inserted, thereby preventing said latch member rotating until the tongue is completely inserted.

4,382,321

MACHINE FOR FRAYING WOVEN FABRICS

Marcel Albert; Joseph Fortin, and Robert Parenteau, all of Les Herbiers, France, assignors to Ets Albert S.A., Les Herbiers, France

Filed Dec. 9, 1980, Ser. No. 214,734
Claims priority, application France, Dec. 13, 1979, 79 30903
Int. Cl.³ D04D *5/00*; D06H *7/00*
U.S. Cl. 28—145 **6 Claims**



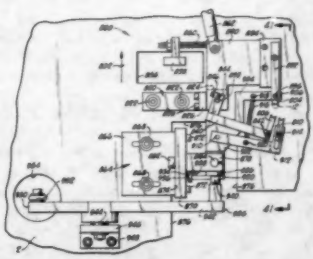
1. A machine for fraying woven fabrics, said machine comprising a table adapted to receive the fabric, said table including an elongated opening; a drive device adapted to advance the fabric over the table; a movable V-shaped punch disposed perpendicularly with respect to the direction of advance; punch driving means for driving the punch with reciprocating vertical movement so that the punch passes the yarns of the fabric which are parallel to the direction of advance through the opening in the table; a movable cutting tool disposed beneath the table for cutting the yarns having passed through said opening; cutting tool driving means synchronized with the punch driving means in order that the cutting tool cuts the yarns passing through the opening in the table when the punch is above the fabric, so as to obtain a drawn fabric with an area having only yarns perpendicular to the direction of advance; and a movable fraying knife disposed above the table and behind the punch with respect to the direction of advance to cut the perpendicular yarns of the drawn fabric and thereby fray the fabric.

4,382,322

AUTOMATED WELDING SYSTEMS AND METHODS

John Fajt, and James V. Neal, Jr., both of Wynnewood, Okla., assignors to Xenell Corporation, Wynnewood, Okla.

Filed Sep. 12, 1980, Ser. No. 186,457
Int. Cl.³ H01J *9/48*
U.S. Cl. 228—103 **57 Claims**



1. An automated method of welding resistors to lamps, said method comprising the steps of:

(a) placing each of a plurality of lamps, each of said lamps

including a bulb with first and second lamp lead wires extending therefrom, between a pair of rotating rollers so that said bulb of each of said lamps is engaged by both of said rollers thereby mechanically orienting each of said lamps so that a longitudinal axis of each of said bulbs is substantially vertical and so that each of said bulbs is oriented substantially identically about said longitudinal axis so that said lamps may be received by a lamp holder;

(b) feeding said oriented lamps to a first position of an automated welding system;

(c) receiving one of said oriented lamps in said lamp holder at said first position;

(d) moving said lamp holder and said one lamp to an intermediate position of said automated welding system between said first position and a subsequent position;

(e) cutting one of said lamp lead wires of said one lamp to a predetermined length, while said one lamp is held at said intermediate position by said lamp holder;

(f) moving said lamp holder and said one lamp to said subsequent position of said automated welding system; and

(g) welding a resistor lead wire of one of said resistors to said cut one of said lamp lead wires of said one lamp while said one lamp is held at said subsequent position by said lamp holder.

17. An automated method of welding lead wires of first electrical components to lead wires of second electrical components, comprising:

(a) mechanically positioning in sequence at a first predetermined position a plurality of said first electrical components of the type including:

a body;

a lower body portion extending from said body in a direction parallel to a first axis of said body, said lower body portion having a width in a direction parallel to a second axis of said body, and a thickness less than said width in a direction parallel to a third axis of said body, said first, second and third body axes being mutually perpendicular; and

first and second lead wires extending from said lower body portion substantially parallel to said first body axis and spaced apart in a direction parallel to said second axis;

said positioning step including the steps of:

orienting each of said electrical components so that said first body axis thereof is vertical, with said lead wires extending downward from said body, and so that said second body axis is parallel to a predetermined horizontal line; and

feeding said oriented electrical components to a predetermined location in space;

said first predetermined position of said electrical components corresponding to a first position of an automated welding system and being defined by said predetermined location in space, said vertical orientation of said first body axes, and said orientation of said second body axes parallel to said predetermined horizontal line;

(b) receiving said bodies of said first electrical components sequentially one at a time in a component holder means when said bodies are positioned at said predetermined position;

(c) releasably holding each of said bodies of said first electrical components in said component holder means in a fixed position relative to said component holder means;

(d) moving said component holder means, with each of said first electrical components held therein, from said first predetermined position to a subsequent predetermined position; and

(e) welding a lead wire of one of said second electrical components to one of said lead wires of each of said first electrical components, while each of said first electrical components is held at said subsequent predetermined position by said component holder means.

4,382,323

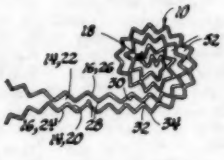
METHOD FOR MANUFACTURING A WOUND FOIL STRUCTURE COMPRISING DISTINCT CATALYSTS

Lloyd R. Chapman, St. Clair Shores; Charles W. Vigor, Rochester, and John F. Watton, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 168,436, Jul. 10, 1980, Pat. No. 4,318,888. This application Oct. 30, 1981, Ser. No. 316,890

Int. Cl.³ B23P *15/00*; **F01N** *3/10, 3/28*

U.S. Cl. 29—157 R **5 Claims**



1. A method for manufacturing a gas treating catalyst structure from at least one foil member, said method comprising

applying a first catalyst composition to a predetermined first foil surface,

applying a second catalyst composition different from the first to a distinct predetermined second foil surface, but not to the first surface, and

forming the foil to bring the first surface to face the second surface and to form a gas passage therebetween, said passage thereby comprising distinct catalysts in facing relation isolated from each other for concurrently treating gases flowing therethrough.

4,382,324

METHOD OF MAKING A LIGHT-WEIGHT, TWO-WHEEL SET

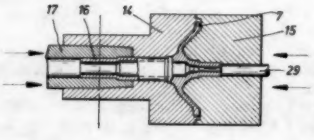
Clemens Halene, Düsseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 217,047

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950565

Int. Cl.³ B21H *1/04*

U.S. Cl. 29—168 **4 Claims**



1. A method of making a light-weight, two-wheel set, comprising the steps of

press-working in a die a cylindrical blank into a shell and short, conical tube;

stepwise forming the shell into a cone;

working the conical tube into a tubular shaft that remains integral with the shell and cone;

shortening the tube;

rolling the cone into a disk;

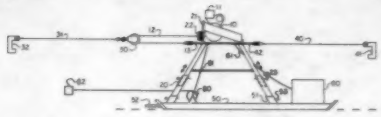
repeating the preceding steps on a different blank in order to obtain a disk with an integral shaft of different diameter; and

telescoping one of the shafts into the other one in order to obtain the two-wheel set.

4,382,325
HEAVY PIPE JOINING SYSTEM

Lynn J. Cormier, 5316 Alpaca Dr., Marrero, La. 70072

Filed Sep. 15, 1980, Ser. No. 187,360
Int. Cl.³ B23P 19/04; B66D 3/00
U.S. Cl. 29—238 14 Claims



1. A light weight, portable, self-contained pipe joining device for temporary attachment to an initial, curvilinear pipe section for imparting axial movement to subsequent curvilinear pipe sections to facilitate joining of the pipe sections together, comprising:

a support stand positionable within the initial curvilinear pipe section, said support stand comprising four multi-part telescoping legs, two front legs and two rear legs, and a securing pin for each leg, each of which legs has an upper section of different cross-sectional area than the next corresponding, lower section into which it is secured by said pin, one of each said sections being fitted with a series of at least two, vertically spaced holes penetrating through the entire diameter of said one section in a front-to-back, longitudinal direction to receive said pin and said other section being fitted with a corresponding hole penetrating through the entire diameter of said other section to likewise receive a respective one of said pins, said telescoping legs being symmetrically and equidistantly spaced above the front-to-back longitudinal axis and the left-to-right transverse axis of said support stand to permit the alignment of said support stand with respect to the intersection of the vertical and horizontal axes of the cross-section of the initial curvilinear pipe section, a vertical plate mounted on edge and extending vertically upward from the upper end of said upper section adjacent the front telescoping leg sections in a plane perpendicular to the longitudinal axis of said support stand, said plate having an opening about which is fitted two sets of two rollers, each set of said rollers being fitted with one roller at each horizontal extent of said opening and the other set of said rollers being fitted one roller each at each vertical extent of said opening; said support stand being mounted on a sled foundation, said sled foundation comprised of a single flat plate horizontally oriented with a front to back longitudinal dimension greater than the left to right transverse dimension, said plate fitted with receptacles sized to receive the lower section of the telescoping leg of said support stand, said lower section of the telescoping leg secured in said receptacle by a pin said receptacles each fitted with a single hole appearing beneath the upper edge of said receptacle and penetrating through the entire diameter of said receptacle in a front to back longitudinal direction to receive said pin with a corresponding single hole appearing above the lower edge of said lower section of the telescoping leg and penetrating through the entire diameter of said lower section of the telescoping leg to receive said pin, said receptacle positioned symmetrically and equidistant about the front to longitudinal axis of said flat plate;

a power operated winch mounted symmetrically about the longitudinal axis of said support stand, said winch being outfitted with a winch cable, said winch cable being mounted on the cable drum of said winch, said cable drum having its axis perpendicular to the longitudinal axis of said support stand, its left and right extremes being equidistant from the longitudinal axis of said support stand and its axis a vertical height above said support stand being substantially equal to the vertical height above said support stand of said opening in said vertical plate through which said winch cable is lead;

winch power drive unit means operably connected to said winch for powering said winch;

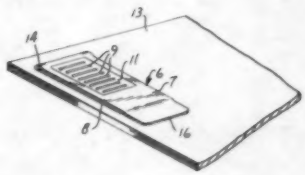
engaging means connected to said winch cable for engaging the subsequent pipe section next to be joined; and

anchoring means associated with said support stand for temporarily engaging the back end of the initial pipe section anchoring said support stand preventing any axial movement of the support stand relative to the initial pipe section.

4,382,326
STAPLE SUPPORTING AND STAPLE REMOVING STRIP

George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1981, Ser. No. 226,113
Int. Cl.³ B25B 27/00
U.S. Cl. 29—270 15 Claims

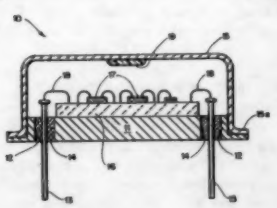


1. A staple-supporting strip for use in overlaying sheets to be stapled and affording subsequent removal and retention of the staples comprising two narrow elongate layers of tough flexible polymeric material, comprising an upper layer and a lower layer with the layers joined at one end, said upper layer having a thickness of between about 0.1 and 0.15 mm (0.004 and 0.006 inch) and the lower layer having a thickness between 0.05 mm and 0.15 mm (0.002 and 0.006 inch) and having a width dimension of between about 1.2 cm and 2.5 cm and having a length of between about 5 cm and 7.6 cm (2 and 3 inches), and means on the exposed surface of said lower strip for temporarily adhering said strip to the surface of a sheet and for holding said free end of said lower layer to said sheet when the upper layer is peeled away from said lower layer to remove the staples.

4,382,327
METHOD FOR PARTICLE ENTRAPMENT WITHIN AN ELECTRICAL DEVICE PACKAGE

William H. Bardens, San Juan Capistrano, and Gale C. Nelson, Mira Loma, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 75,864, Sep. 17, 1979, Pat. No. 4,352,119.
This application Oct. 26, 1981, Ser. No. 315,090
Int. Cl.³ H01L 21/48, 21/52, 21/54, 21/56
U.S. Cl. 29—588 10 Claims



1. A method for protecting the operational element within a

package of an electrical device from objectional foreign particles within said package, said method comprising:

(a) introducing into the interior of said package an effective amount of an organo polysiloxane material to entrap and retain foreign particles which become mobilized within said package, said organo polysiloxane material being the reaction product of an organo polysiloxane resin and an effective amount of a curing agent to partially cure said resin to a substantially non-flowing, particle entrapping and particle retaining condition; and

(b) securing said organo polysiloxane material within said package.

4,382,328

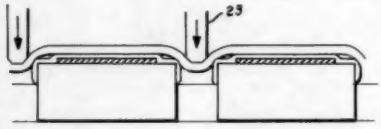
METHOD OF MAKING STATIONARY ELECTRODES FOR ELECTROSTATIC TRANSDUCERS

Arthur A. Janszen, 34 Oak Ave., Belmont, Mass. 02178

Filed Jan. 2, 1981, Ser. No. 221,991

Int. Cl.³ H04R *31/00*

U.S. Cl. 29—594 **10 Claims**



1. A method of forming a stationary electrode for an electrostatic acoustic transducer, said method comprising:

providing a frame including a planar face portion, there being a plurality of recesses distributed over said face portion;

coating selected areas of said face portion only with a conductive layer, avoiding said recesses;

coating said face portion, including the margins of said recesses, with an adhesive;

placing over said face portion a film of a high dielectric strength polymer; and

locally distorting said film into each of said recesses so as to wrap the film around the margin of each said recess and to puncture the film centrally in each recess, said film being bonded to said frame by said adhesive.

4,382,329

TUBE INSERTION MACHINE

Nobuo Takaoka, Kakogawa, and Kosei Ageta, Kobe, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Aug. 22, 1980, Ser. No. 180,442

Claims priority, application Japan, Aug. 24, 1979, 54-108416; Aug. 24, 1979, 54-108417; Aug. 24, 1979, 54-108418

Int. Cl.³ B23P *15/26*

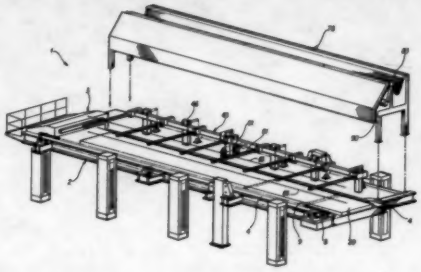
U.S. Cl. 29—726 **7 Claims**

1. A tube insertion machine comprising:

an elevator;

a plurality of guides mounted on said elevator, and mutually spaced by a predetermined distance, for supporting and guiding tubes for movement in a horizontal first direction, at least some of said guides being rotatable about an axis in a second vertical direction transverse to said first direction and shaped to lock said tubes against movement in said second direction when said guides are in a rotated position; and

a pusher movable on said elevator in at least said first direction, said pusher including a plurality of pawls adapted to engage said tubes for moving said tubes in said first direction, whereby said tubes may be accurately inserted in a plate spaced from said tubes in said first direction.



4,382,330

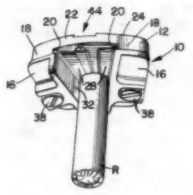
COIN WRAPPER CUTTING TOOL

Kenneth H. Harbaugh, Cite Ouest G, 1196 Gland, Switzerland

Filed Oct. 2, 1980, Ser. No. 193,049

Int. Cl.³ B67B *7/30*; B26B *29/00*; G07D *9/00*

U.S. Cl. 30—124 **10 Claims**



1. A coin wrapper cutting tool comprising in combination:

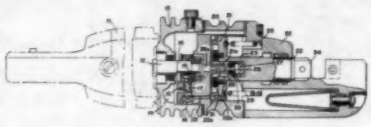
a. base or principal body portion;

b. means for cutting crimped end portions of wrappers of packaged rolls of coins; and

c. means for shielding said cutting means when cutting is not required;

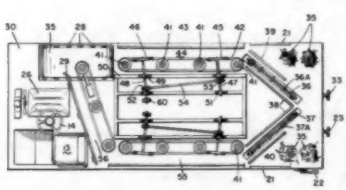
wherein said base or principal body portion includes at least one shoulder supporting said cutting means in stationary position and said shielding means normally covering said cutting means from exposure, said shoulder having a side beyond which said cutting means projects; also wherein said base or principal body portion includes a stationary platform portion extending forwardly in fixed relationship to said cutting means from a back side and against which platform portion the end of a packaged roll of coins may be pressed; and further wherein said platform portion is formed with an abutment surface extending generally parallel to an upper surface on said shoulder and to said cutting means but closer to the back side of said base or principal body portion than said cutting means by an amount facilitating cutting the crimped end portions of wrappers of packaged rolls of coins without interference from coins in such packages.

4,382,331
HYDRAULIC CUTTER
Kiyoshi Kimura, Fujisawa, Japan, assignor to Kabushiki Kaisha Ogura Chuck Seisakusho, Kanagawa, Japan
Filed May 6, 1981, Ser. No. 261,013
Claims priority, application Japan, Jun. 27, 1980, 55-90134
Int. Cl.³ B26B *17/00*
U.S. Cl. 30—180 **2 Claims**



1. A hydraulic cutter apparatus comprising a cylinder having an inlet and outlet passages for a working fluid and a piston head fitted for axial displacement, a piston rod connected at one end to said piston head, a blade secured to the other end of said piston rod, means for biasing said piston head and rod into a non-protruding position, pumping means for feeding said working fluid through said inlet passage into said cylinder for axially displacing said piston head and said piston rod into a protruding position for a cutting operation of said apparatus, and valve means in said outlet passage for releasing the working fluid from said cylinder, thus allowing said piston head and rod to move back from said protruding position, said valve means comprising a valve member having a first position in which said outlet passage is thereby closed and a second position in which the outlet passage is opened, and a guide bar centrally projecting from the inner surface of said cylinder, said valve member being disposed in said guide bar to actuate between said first and second positions in response to displacement of said piston head relative to said cylinder.

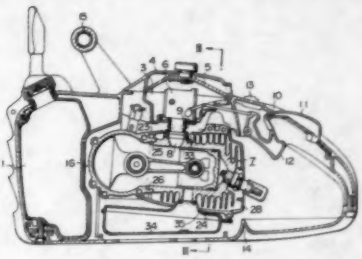
4,382,332
PRUNING MACHINE
Richard A. Dominge, Mission Viejo, Calif., assignor to Bordier's Nursery California, Inc., Santa Ana, Calif.
Filed Aug. 3, 1981, Ser. No. 289,751
Int. Cl.³ A01G *3/00*
U.S. Cl. 30—379 **10 Claims**



1. In a trimming apparatus,
a cutting device mounted adjacent a path for moving items to be trimmed, and
moving mechanism for moving said items along said path in a linear direction while concurrently rotating said items relative to said cutting device.

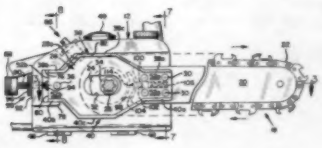
4,382,333
CHAIN SAW
Akira Nagashima, Kawasaki, and Yasuo Saito, Fujisawa, both of Japan, assignors to Kioritz Corporation, Japan
Filed Sep. 11, 1981, Ser. No. 301,171
Claims priority, application Japan, Mar. 31, 1980, 55-42428
Int. Cl.³ F01P *1/02*
U.S. Cl. 30—381 **1 Claim**

1. A chain saw having a frame, a saw chain mounted of said frame in such a manner as to run along a predetermined path and an engine mounted on said frame and adapted to drive said saw chain, characterized in that said engine includes a crank case and a cylinder detachably secured to said crank case and arranged horizontally with its head directed rearwardly, and that said crank case has cooling air guide walls formed unitarily therewith and extended along the upper and lower sides of said cylinder, said cooling air guide walls defining a cooling air



passage opened at its one side to the atmosphere and communicated at its other end with the air outlet of a cooling fan, the rear side of said cooling air passage facing said head being closed by an end cover secured to the rear ends of said cooling air guide walls, said end cover being detachable from said cooling air guide walls to permit the withdrawal of said cylinder after detaching of said cylinder from said crank case.

4,382,334
CHAIN SAW DEVICE
Michael J. Reynolds, Gladstone, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Jul. 1, 1981, Ser. No. 279,531
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—386 **22 Claims**



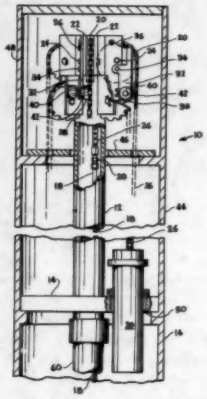
1. In a chain saw including a frame and having a driving motor,
a saw chain cassette comprising a saw bar having a saw chain entrained therearound and a sprocket for engaging said chain and adapted to be driven by said motor,
and a movable clamping cover adapted for interengagement with said frame while receiving said cassette between said cover and said frame in position for said sprocket to be driven by said motor, wherein said clamping cover removably secures said cassette against said frame by releasable compression to provide for rapid insertion and removal of said cassette,
said cover and said frame having pads for engaging sides of said cassette, said cassette having longitudinal alignment ribs with which said pads are matingly cooperable for holding said cassette against rotation.

4,382,335

HEAD ASSEMBLY FOR MULTIPOSITION BOREHOLE EXTENSOMETER

Donald N. Frank, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 9, 1981, Ser. No. 271,752
Int. Cl.³ G01B 5/02
U.S. Cl. 33—125 B **7 Claims**



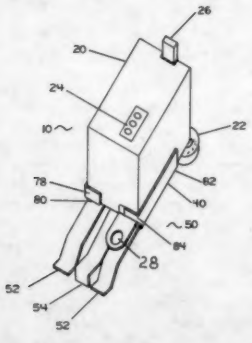
1. A head assembly for a borehole extensometer, comprising:
a vertical hollow standpipe;
a first sprocket wheel rotatably mounted to the standpipe;
a chain passing over and engaging the first sprocket wheel;
a member movably mounted to the standpipe;
a second sprocket wheel rotatably mounted to the member;
means connected to the standpipe and to the member for maintaining the second sprocket wheel in engagement with the chain; and
a potentiometer connected to and driven by the second sprocket wheel.

4,382,336

LINE LENGTH MEASURING DEVICE

Daniel D. Call, R.R. 1, Box 216, Athens, Wis. 54411

Continuation-in-part of Ser. No. 88,009, Oct. 25, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,626
Int. Cl.³ G01B 3/12
U.S. Cl. 33—134 R **7 Claims**



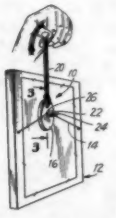
1. In an apparatus for determining the amount of fishing line in use, wherein said apparatus includes a digital counter activated by said line and a flat, clip mounting means having said digital counting means secured thereto, the improvement wherein:
a. said flat clip mounting means has a counting end at a first end thereof and a rod mating means capable of being secured to a fishing rod at a second end thereof;
b. said digital counter is secured to a topside of said counting end;
c. said rod mating means is trifurcated and includes two lateral prongs, a central prong between said two lateral prongs;
d. said two lateral prongs are substantially symmetrical and occupy substantially the same planes;
e. said central prong is substantially symmetrical to said lateral prongs, but oppositely disposed therefrom to thereby permit said central prong to cooperate with said two lateral prongs to mount said apparatus as desired;
f. said mounting means has said topside in contact with a bottom side of said digital counting means;
g. an elongated flange is substantially perpendicular to said topside;
h. said elongated flange extends forward over one of said lateral prongs and rearwardly away from said topside to hold at least one side of said digital counting means;
i. a shortened flange is substantially perpendicular to said topside and oppositely disposed from said elongated flange; and
j. said shortened flange extends over one of said lateral prongs.

4,382,337

DEVICE FOR LOCATING SUSPENSION HOOK

Robert L. Bendick, 360 Grace Church St., Rye, N.Y. 10580

Filed Jan. 4, 1982, Ser. No. 336,921
Int. Cl.³ G01B 3/02
U.S. Cl. 33—180 R **4 Claims**



1. A device for marking the location of a suspension element on a wall, said suspension element being adapted to support on said wall an article having a cord engaged with said suspension element, comprising,
(a) a carrier member,
(b) a marking pointer extending from one side of said carrier member,
(c) an elongated flexible member threaded through an aperture in the carrier member for suspending said carrier member in substantially vertical disposition in which said pointer extends horizontally,
(d) said pointer being provided with a groove adjacent the carrier member for receiving the cord of said article for supporting said article in the same manner as said article would be supported on a wall by engagement of the cord with a suspension element on the wall,
(e) whereby the carrier member together with the article supported by engagement of its cord with the groove on the pointer can be positioned at the desired location on the wall to enable the pointer to make an impression on the wall for locating a suspension element which will automatically permit the same article to be supported on said wall at said desired location,

(f) said carrier member being compact in shape and confined within the periphery of said article when said article is supported by said carrier member, and

(g) said carrier member and pointer being molded in one piece.

4,382,338

MANUAL PLUG COMPARATOR FOR CHECKING THE DIAMETER OF HOLES

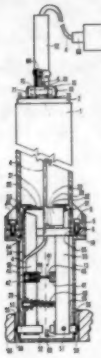
Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed May 29, 1981, Ser. No. 268,638

Claims priority, application Italy, Jun. 2, 1980, 3435 A/80

Int. Cl.³ G01B *7/12, 3/26*

U.S. Cl. 33—178 E **9 Claims**



1. A manual plug comparator for checking the diameter of holes of mechanical parts comprising: support means; two feelers adapted to contact diametrically opposite points of the part to be checked; feeler supporting means coupled to the feelers and the support means for permitting mutual displacements of the feelers substantially along diametral directions of said holes; transducer means coupled to the feeler supporting means for detecting the mutual positions of the feelers; a cord connected to the transducer means; a connector connected to one end of the cord to connect the cord to a supply, detection and indication unit; a handle; first connection means for fastening the handle to the support means and for permitting disconnection of the handle from the support means; a locking device defining a surface adapted to lock a portion of the cord; second connection means for fastening the locking device to the handle at an external position thereof and for permitting disconnection of the locking device from the handle and the cord; wherein said handle has an opening for the passage of the cord, this opening being sufficiently wide to permit the passage of the handle over the cord and the connector.

4,382,339

BOW SQUARE

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.

Filed Jul. 6, 1981, Ser. No. 280,342

Int. Cl.³ F41G *1/00;* **G01B** *3/30*

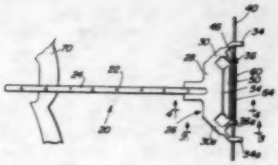
U.S. Cl. 33—265 **6 Claims**

1. In a generally T-shaped bow square for attachment to an archery bow for checking adjustment of brace height, nocking point, and kisser, and including a measuring bar for carrying a scale thereon, and a transversely extending cross arm having bow attachment means for releasably securing said bow square to a bow string,

the improvement wherein said bow attachment means comprises a plurality of generally coplanar, substantially immobile individual tab-like fingers projecting from said cross arm, said fingers stressingly engaging opposed surfaces of a bow string of a bow at spaced positions along a bow-square-supporting lineal segment of the bow string,

at least two of said fingers having walls defining substantially-in-line notch-like bow-string-receiving grooves delineating radial boundary elements of a restricted passageway for the bow string extending axially through said grooves,

said bow string contacting fingers effectively limiting transverse dimensions of said passageway to obviate friction-free straight-line traverse of a bow string therethrough,



string-contacting walls of said fingers defining a tortuous longitudinal passageway precluding interference-free traversal of a taut bow string therethrough,

passage of a taut bow string through said passageway establishing frictional interference contact between the bow string and at least one passageway-bounding wall presented thereto and effecting temporary resilient distortional deformation of said bow string to provide tensionsl frictional gripping engagement between said bow srting and said fingers of said bow square to support said bow square on the bow string against free sliding displacement lineally therealong, and with said measuring bar extending at right angles to the bow string.

4,382,340

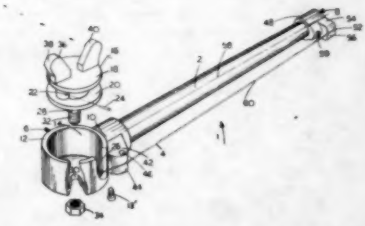
STRAIGHT EDGE DEVICE

Kenneth C. Black, Site "E", R.R. #2, Nanaimo, British Columbia, Canada (V9R 5K2)

Filed Jul. 13, 1981, Ser. No. 282,387

Int. Cl.³ B43L *7/00*

U.S. Cl. 33—413 **10 Claims**



1. An apparatus for forming a straight edge device when used with an elongate, rigid member and a wire, the apparatus comprising:

a first member having means connectable to a first end of the elongate member, a reel for storing and tensioning the wire and a first wire support for supporting the wire extending from the reel such that the first member and the elongate member are entirely to one side of the wire extending from the first support towards a second end of the elongate member;

a second member having means connectable to the second end of the elongate member, means for securing a free end

of the wire distal the reel, and a second wire support for supporting the wire such that the second member and the elongate member are entirely to said one side of a straight length of the wire between the first and second wire supports, the length of wire forming a straight edge when the wire is tensioned by the reel; and

the wire supports comprising protrusions on the first and second members, the wire supports being angularly aligned relative to a longitudinal axis of the elongate member when the first and second members are connected thereto so the length of wire is generally parallel to the axis, the wire supports extending outwardly so that the length of wire is spaced-apart from the elongate member, the first wire support having a hard insert to reduce wear of the first member by wire moving over the first support.

4,382,341

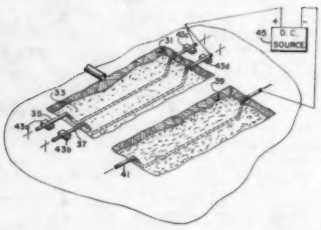
METHOD FOR DRYING DRILLING MUD

Christy W. Bell, Berwyn; Charles H. Titus, Newtown Square, both of Pa., and Robert Y. Pogontchef, Alberta, Canada, assignors to Electro-Petroleum, Inc., Wayne, Pa.

Filed Nov. 18, 1980, Ser. No. 207,992

Int. Cl.³ F26B *5/00*

U.S. Cl. 34—1 **10 Claims**



1. A method for drying drilling mud comprising the steps of:

a. providing in the earth's surface a drilling mud drying zone containing a quantity of drilling mud and including at least one electrically conductive element constituting an anode, and a liquid collection zone including at least one electrically conductive element constituting a cathode, said anode being disposed in said drying zone, said cathode being disposed in said collection zone, and said drying zone and said collection zone being positioned so as to permit the conduction of electric current through said drilling mud between said anode and said cathode; and

b. applying across said anode and said cathode a direct electric potential which provides sufficient current to pass between said anode and said cathode, to cause liquid present in said drilling mud to flow toward and accumulate adjacent to said cathode in said liquid collection zone, thus drying said drilling mud.

4,382,342

DYNAMIC INTERNAL FITTING SYSTEM FOR A SPORT SHOE

Richard G. Spademan, 933 Addison St., Palo Alto, Calif. 94301

Filed Mar. 15, 1978, Ser. No. 886,946

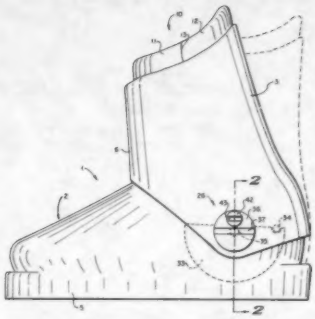
Int. Cl.³ A43B *5/04*

U.S. Cl. 36—119 **28 Claims**

1. A sport shoe comprising:

movable foot-restraining means for controlling movement of a foot in the shoe; and

means responsive to a movement of the leg to which said foot is attached for moving said foot-restraining means to



tighten and loosen the fit of said foot-restraining means relative to said foot as said leg is moved.

4,382,343

STRETCHING MACHINE

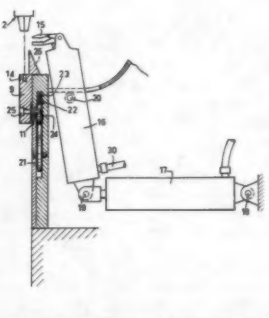
André Chahanian, Alfortville, France, assignor to Chaussures Helene, Verneuil l'Etang, France

Filed Jan. 19, 1981, Ser. No. 226,398

Claims priority, application France, Jan. 30, 1980, 80 01979; Dec. 1, 1980, 80 25418

Int. Cl.³ B27F *07/15;* **B44D** *03/18*

U.S. Cl. 38—102.91 **14 Claims**



1. A machine for attaching a canvas or the like to a framework by means of fasteners applied by a fastening head, comprising an anvil for supporting the framework and positioned adjacent to said fastening head and movable laterally with respect to said fastening head to move said framework past said fastening head, and clamp means for both holding and stretching said canvas before each application of fasteners by said fastening head.

4,382,344

DISPLAY BOX ASSEMBLY

Sandra D. Freeman, 487-A Marsh St., San Luis Obispo, Calif. 93401

Filed Jul. 20, 1981, Ser. No. 284,722

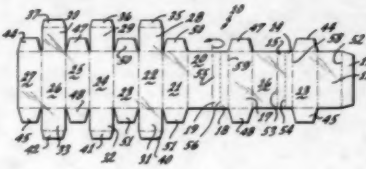
Int. Cl.³ G09F *19/00*

U.S. Cl. 40—539 **24 Claims**

1. An assembly of boxes formed of a unitary blank of sheet material, said assembly comprising:

a series of boxes including at least one middle box having the walls thereof formed from body panels defined on said blank;

said middle box having each of its diagonally opposite corners respectfully joined to a corner of an adjacent box in the series by a joining flap, each said joining flap formed by gluing together a pair of adjacent narrow tabs defined on said blank disposed between two of the body panels forming the joining corner, and each said joining flap



having one of its faces glued to one of the other two body panels forming the joining corner;

an end flap defined on said blank and being glued to the body panel on the opposite end of said blank to form a corner of said boxes other then a joining corner; and

closing flaps defined on the tops and bottoms of selected ones of said body panels.

4,382,345

FISHING LURE

Ronald M. Bassett, 2107 Summerdale, Chicago, Ill. 60625

Filed Jun. 2, 1981, Ser. No. 269,484

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.17 **10 Claims**

1. A fishing lure comprising a body member, a shaft having one end connected to said body member and the other end having means for affixing a line thereto, hook means secured to said body member and a spinner rotatably mounted on said shaft, said spinner comprising a strip of flat material of greater length than width, formed into a frustoconical body with the ends of the strip being folded over each other, and a tubular bearing member having one end affixed to the frustoconical portion of said spinner at an aperture provided therein, and having the other end affixed to both folded over ends at apertures provided in each of said ends, said shaft extending through the central opening of said tubular bearing member and through the openings of said frustoconical wall and the apertures of said folded over ends, whereby said spinner causes said lure to oscillate when drawn through the water.

4,382,346

FISH HOOK SETTING DEVICE

Frank N. Gardner, 4624 Wyman Dr., Sacramento, Calif. 95821

Filed Feb. 17, 1981, Ser. No. 234,988

Int. Cl.³ A01K *91/06*

U.S. Cl. 43—15 **5 Claims**

1. A fish hook setting device, comprising:

carriage means;

guideway means for constraining the motion of said carriage means to a predetermined path;

mounting means for so mounting said guideway means on a fishing pole that said path is substantially parallel to said fishing pole;

knockoff cam means located on said guideway means near the inner end of said path, which is the end thereof nearer to a handle of said fishing pole when said guideway means is mounted on said fishing pole;

detent means located near the outer end of said path providing a fixed stop means;

gripping means mounted on said carriage means for unidirectionally releasably gripping a fishing line carried on a winding reel and passing through eyes of said fishing pole, said gripping means comprising pivoted lever means for

jamming said line against said fixed stop means, said lever means being so inclined as to permit the reeling in of said line but to prevent the paying out of said line except when deflected by said knockoff cam means;

detent engaging means on said carriage means for engaging said detent means and being disengaged therefrom when said fishing line is pulled in a direction away from said handle;

elastic means comprising at least one elongated strand of elastic material for propelling said carriage along said path when said detent engaging means is disengaged from said detent means;

first attaching means for attaching said elastic means to said carriage means; and

second attaching means for attaching said elastic means to said guideway means near said inner end of said path.

4,382,347

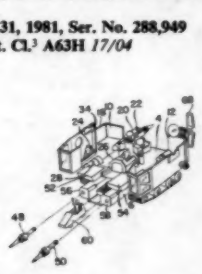
TOY TRACTOR ASSEMBLY

Kazuya Murakami, Tokyo, Japan, assignor to Takara Co., Ltd., Osaka, Japan

Filed Jul. 31, 1981, Ser. No. 288,949

Int. Cl.³ A63H *17/04*

U.S. Cl. 46—219 **11 Claims**



1. A space vehicle toy assembly comprising:

a base member;

means for movement of the base member across a support surface;

an upper housing member having movable wall members connected to the base member, the wall members being initially positioned to provide a closed encapsulated space for simulating a compartment for operators and alternatively being pivoted outward from the base member to provide a simulated opened command room with individual work areas for toy figures;

a lower housing member positioned beneath the upper housing member and relatively movable into or out of the base member;

means for firing projectiles on the lower housing member including a toy vehicle projectile;

means for biasing the wall members to an open position;

means for biasing the lower housing member to a position extended from the base member, and timing means for providing a controlled releasing of the lower housing member to move away from the base member and to carry the projectiles with the lower housing member until the lower housing member moves a predetermined distance away from the base member, the timing means further providing an immediate release of the wall members.

4,382,348

SOILLESS PLANT GROWING DEVICE

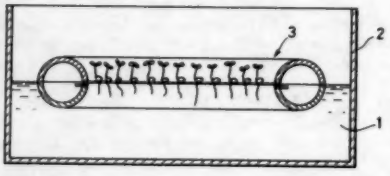
Seiki Kitsu; Masayasu Yanagisawa, both of Tokyo, and Hitoshi Kobayashi, Yamanashi, all of Japan, assignors to The Greenterior Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,584

Claims priority, application Japan, Mar. 25, 1980, 55-36869; Jun. 14, 1980, 55-82417[U]; Aug. 18, 1980, 55-116007[U]; Aug. 18, 1980, 55-116008[U]

Int. Cl.³ A01G *31/02*

U.S. Cl. 47—59 **12 Claims**



1. A soilless plant growing device comprising:

a porous fine mesh plate; and

a buoyant frame, said plate being supported only at a peripheral portion thereof by said frame, the buoyancy of said porous plate and frame being such that said porous plate is positioned at least in contact with a surface of a liquid when said device is floated on said liquid, substantially all of said plate being unconfined, open, and suitable for growing plants.

4,382,349

WINDOW OPERATOR

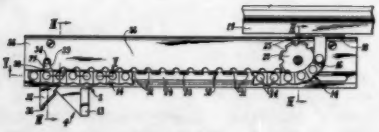
Gerald F. Dunphy, Glen Waverly, and Donald J. Newman, Somerville, both of Australia, assignors to Ogden Industries Pty. Limited, Melbourne, Australia

Filed Jul. 1, 1980, Ser. No. 166,685

Claims priority, application Australia, Jul. 17, 1979, PD9601

Int. Cl.³ E05F *11/00*

U.S. Cl. 49—325 **11 Claims**



1. A window operator including an elongate guide track and a flange projecting outwardly from said guide track and extending along substantially the entire length of the guide track, said flange having a slot which extends substantially parallel to said guide track, a manually operable actuator mounted on said guide track and extending beyond said flange for sliding movement therealong between two extreme positions corresponding to window closed and fully open positions respectively, a length of chain having an inner end connected to said actuator for movement therewith and an outer end attachable to a window to be controlled by said operator, guide means cooperating with said chain to cause a stored portion of said chain to generally follow the path of said guide track, said stored position including and extending from said chain inner end, an active portion of said chain extending between said guide means and said chain outer end and the relative proportions of said stored and active portions varying according to the position of said actuator along said track said chain stored portion and said actuator being located on opposite sides of said flange and being interconnected by connecting means extending through said slot, and retaining means operable to releasably hold said actuator at any one of a plurality of selected positions between said two extreme positions.

4,382,350

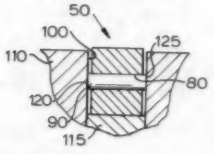
HONING STONES

Robert H. Gillette, Angola, Ind., assignor to Brammall, Inc., Angola, Ind.

Continuation of Ser. No. 123,464, Feb. 21, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,801

Int. Cl.³ B24D *5/00*

U.S. Cl. 51—206.5 **2 Claims**



1. In combination an improved very hard abrasive of block shape which is to be mounted in a slot of a tool holder comprising a transverse opening formed through said very hard abrasive in a dead vibration zone, a piece of flexible material mounted in said transverse opening and with its ends overhanging from the sides of said very hard abrasive, said very hard abrasive and flexible material mounted in said slot of said tool holder with said overhanging ends of said flexible material deformed between the side walls of said slot and said very hard abrasive so as to firmly retain said abrasive in said tool holder and said flexible material has end faces which abut and are deformed within the slot of the tool holder.

4,382,351

CHUCK ASSEMBLY FOR LENS BLOCK

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

Division of Ser. No. 44,991, Jun. 4, 1979, Pat. No. 4,267,672. This application Nov. 17, 1980, Ser. No. 207,205

Int. Cl.³ B24B *13/00*

U.S. Cl. 51—217 L **19 Claims**

1. A lens block chuck assembly facilitating desired positioning of a lens blank relative to lens generating apparatus, said chuck assembly comprising:

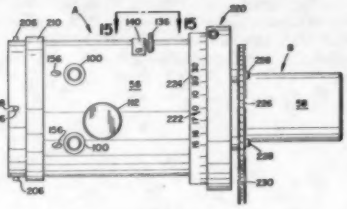
a chuck body having a first inner end and a second outer end spaced apart from each other with the chuck assembly longitudinal axis extending therebetween;

mounting means at said first end adapted to be fixedly associated with said generating apparatus;

a clamp assembly disposed in said chuck body adjacent said second end adapted to selectively fixedly receive a mounting projection on a lens block having one face of a lens blank secured thereto at generally the lens blank frame center axis in a manner such that said frame center and chuck assembly longitudinal axes are located generally coaxial, said clamp assembly being selectively movable

between an opened condition allowing said lens block to be inserted into and removed from association with said chuck assembly and a closed condition fixedly clamping said lens block;

means for effecting selective incremental movement of said clamp assembly generally normal to said longitudinal axis by a preselected amount whereby a lens block and associated lens blank fixedly received thereby are similarly moved in order that a predetermined desired optical center axis for said lens blank spaced from said frame center



axis may be moved to a position generally coaxial with said chuck assembly longitudinal axis to effect lens blank decentration; and,

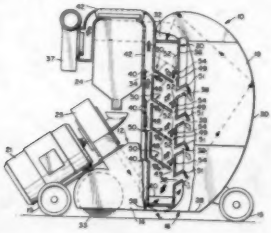
means for permitting selective incremental rotation of at least said clamp assembly about said chuck assembly longitudinal axis between a first home position and a fixed second rotation position arcuately spaced from said home position by a predetermined amount, said rotated position orienting a base line axis of said lens blank relative to said generating apparatus to facilitate generation of prescribed optical characteristics into said lens blank.

4,382,352

APPARATUS FOR CLEANING SURFACES, INCLUDING MEANS FOR SEPARATING DEBRIS AND ABRASIVE MATERIAL

Robert T. Nelson, 12601 Arrowhead Ter., Oklahoma City, Okla. 73120

Filed Mar. 5, 1981, Ser. No. 240,913
Int. Cl.³ B24C 9/00
U.S. Cl. 51—424 **6 Claims**



1. An apparatus for the treatment of a surface with particulate abrasive material projected at high velocity comprising:

(a) projecting means for propelling a stream of particulate abrasive material against the surface to be treated;

(b) a vertically disposed cleaning chamber for removing debris from abrasive material propelled toward and rebounding from the surface; said cleaning chamber having an upper inlet for receiving abrasive material and debris;

(c) a recovery conduit for receiving and directing a stream of abrasive material and debris rebounding from the surface to said cleaning chamber inlet;

(d) said cleaning chamber further comprising a plurality of vertically arranged compartments;

(e) each of said compartments including a first vertical wall and a second vertical wall opposite said first vertical wall and further including a solid inclined baffle extending from said first vertical wall toward said second vertical wall and terminating short of said second vertical wall to provide a passage adjacent said second vertical wall for passage of abrasive material and debris from one compartment to the next lower compartment;

(f) a plurality of first openings in said second vertical wall for admitting air to said compartments, each of said first openings being arranged between successive baffles;

(g) a plurality of second openings in said first vertical wall for discharging air and debris from said compartments, each of said second openings being immediately below a corresponding one of said baffles; and

(h) means for causing air to move transversely of said compartments from each of said first openings through the corresponding compartment and for discharging the air and entrained debris through the corresponding second opening;

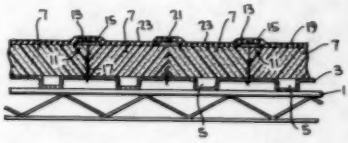
(i) abrasive material and any remaining debris being caused to flow down each said inclined baffle and to be discharged from the end thereof into a corresponding one of said passages directly above the next lower one of said first openings.

4,382,353

REVERSE FURRING TECHNIQUE

Thomas L. Kelly, 31 Sands St., Waterbury, Conn. 06723

Filed Jun. 24, 1980, Ser. No. 162,418
Int. Cl.³ E04D 1/28, 1/36
U.S. Cl. 52—506 **1 Claim**



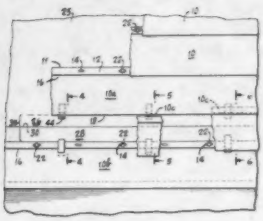
1. For use in securing adjacent loosely laid insulation blocks to a roof deck, a roofing structure comprising a roof deck and a plurality of elongated insulation blocks supported on and in direct engagement with the roof deck in directly abutting positions providing a longitudinally extending seam between adjacent insulation blocks, a furring strip covering said longitudinally extending seam in overlying relation thereto and in bridging relation to and in direct contact engagement with said adjacent insulation blocks, the furring strip having a length at least equal to that of the individual elongated insulation blocks, fasteners extending through said furring strip and into the roof deck, the fasteners coacting in cooperation with the furring strip to secure and maintain the strip and underlying insulation blocks in proper position as an integral unit with the adjacent abutting blocks being clamped against the roof deck by the fasteners, a continuous imperforate membrane sheet in direct overlying contact engagement with said furring strip and insulation blocks and providing a covering therefor, and adhesive means bonding the membrane sheet directly to the furring strip, the roof deck being inclined to the horizontal for natural flow of water therefrom and the longitudinally extending seams between adjacent abutting blocks extending parallel to the direction of the roof deck inclination and the natural flow of water.

4,382,354

SIDING PANEL SYSTEMS WITH PANEL-MOUNTING DEVICES

J. Lynn Gailey, Newton Falls, and Carl A. Wollam, Cortland, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Apr. 28, 1981, Ser. No. 258,279
Int. Cl.³ E04D *1/34, 3/362*
U.S. Cl. 52—521 **8 Claims**



1. A system for mounting, on a wall, a horizontally elongated sliding panel in interposed relation to vertically spaced upper and lower courses of like panels already secured to the wall, said siding panels being of a type that are disposed one above another on a wall in parallel, overlapping array, each of said panels having a top margin along which it is attached to the wall, a bottom margin, and complementary first and second locking means respectively adjacent said top and bottom margins for interlocking vertically adjacent overlapping panels by engagement of the first locking means of one overlapped panel with the second locking means of an overlapping panel immediately above it in the array, the vertical distance between the second locking means of said upper course and the first locking means of said lower course being less than the vertical distance between the first and second locking means of said interposed panel, said system comprising

(a) clip means fixedly mountable on the wall for interlocking with the second locking means of a panel of said upper course to secure the bottom margin of the upper-course panel to the wall;

(b) retaining means securable to the wall and having a portion for engaging the first locking means of the interposed panel, at a location behind the last-mentioned upper-course panel and above the elevation at which the first locking means of the interposed panel would interlockingly engage the second locking means of said last-mentioned upper-course panel, to hold the first locking means of the interposed panel against downward movement below said location and to secure the top margin of the interposed panel to the wall, with said clip means and said retaining means both concealed behind the upper-course and interposed panels, said clip means being shaped and dimensioned to permit the top margin of the interposed panel to be inserted upwardly behind the last-mentioned upper-course panel sufficiently to position the first locking means of the interposed panel at said location; and

(c) means for interlocking with the second locking means of the interposed panel, when the first locking means engages said portion of said retaining means at said location, to secure the bottom margin of the interposed panel to the wall;

wherein the improvement comprises:

(d) said retaining means including means for positively restraining the first locking means of the interposed panel against upward movement above said location; and

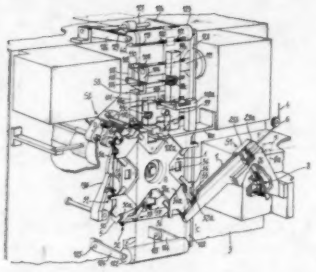
(e) said interlocking means comprising means, mountable on the top margin of a panel of the lower course so as to be selectively positionable throughout a range of elevations relative thereto, for interlocking with the second locking means of the interposed panel outwardly of the lower-course panel at a level below that at which the second locking means of the interposed panel would interlock with the first locking means of the lower-course panel.

4,382,355

APPARATUS FOR THE APPLICATION OF A THREAD HAVING A LABEL ATTACHED TO IT TO A STRIP OF FILTER PAPER IN A MACHINE FOR THE AUTOMATIC PRODUCTION OF FILTER BAGS FOR THE PRODUCTS TO BE INFUSED

Andrea Romagnoli, Bologna, Italy, assignor to I.M.A. - Industria Macchine Automatiche S.p.A., Bologna, Italy

Continuation-in-part of Ser. No. 51,655, Jun. 25, 1979, Pat. No. 4,288,224. This application Jan. 23, 1981, Ser. No. 227,767
Claims priority, application Italy, Mar. 6, 1979, 3341 A/79
Int. Cl.³ B65B *29/04*
U.S. Cl. 53—134 **5 Claims**



1. In an apparatus for the application of a suspension thread of natural fibers having a label attached to it to a strip of filter paper in a machine for the automatic production of filter bags of an infusion product operating in conjunction with a label supply device, the filter paper strip having on one of its surfaces a light coating layer of thermoplastic material, the apparatus comprising means for continuously supplying the strip of filter paper along a working line and, disposed along the latter, folding means for folding the strip of paper into two symmetrical half sections, having the thermoplastic material coated surfaces facing one another along a longitudinal median line, dosing means for supplying discrete quantities of the infusion product at uniform distances to the folded strip, joining means for joining by means of heating the said folded strip transversely between the quantities of infusion product at uniform distances and along the opposite longitudinal edges, and means for cutting the strip at the said transverse joints, and the labels comprising thermoplastic material and being V-shaped, the improvement which comprises:

a rotary head having radial arms to be disposed downstream of the label supply device, with its front portion behind the strip of filter paper, each radial arm being associated in the plane of rotation of the head with thread-guide means and a series of three nippers, one downstream and two upstream in respect of the direction of rotation of the rotary head;

means for rotatably actuating the rotary head intermittently;

means for intermittently halting the filter paper strip in synchronism with intermittent halting of the rotary head;

means for causing the series of nippers to open and close;

guide channel means joined in a coplanar manner between the thread-guide means and the nippers of the arms of the rotary head, for communication with the label supply device;

a first working station comprising means for nipper joining being provided along the guide channel means;

supply means for supplying a continuous thread to the thread guide means, between the nippers located between the joining means and through the guide channel means;

first oscillating nipper means for taking, under the action of control means, in uniform succession, single V-shaped labels from the label supply device and to transfer them to the first working station between the nipper joining means, with the continuous thread being between the V-shaped limbs of the labels;

means for actuating the nipper joining means in order to fix, by means of heating, the labels to the continuous thread, the labels being thereby fixed to the continuous thread and being caused to move, by two of the three nippers, between the thread guide means of each radial arm as a result of the intermittent movement of the rotary head and thus being disposed in the plane of rotation between the said two nippers; and

second and third working stations operating along the path of rotation of the rotary head at one of the radial arms and respectively between two successive radial arms facing the strip of filter paper in the rest position of the rotary head, said second working station comprising cutting means designed to cut the continuous thread downstream of the two nippers, pin means movable perpendicularly to the plane of rotation of the rotary head adapted to intersect, under the action of control means, the plane of the thread externally to the thread at the nipper upstream of the said two nippers, thread tensioning means designed to move the section of thread upstream of the third nipper from its plane, and second oscillating nipper means designed, under the action of control means, to grip the label between the said two nippers and to oscillate with a movement which is opposite to that of the rotary head, thus inserting the said label between the prongs of the said third nipper and winding the thread about the said movable pin means, the third working station comprising suction means extending along the path of the filter paper strip designed, by means of suction across the filter paper strip to cause the thread to adhere to the strip at the area of the label and at least one other point upstream of the label, and joining means of a movable type designed, under the action of control means, to heat the said two areas at which the thread adheres to the filter paper strip, causing localized impregnation of the thread with the thermoplastic material of the coating layer of the strip by diffusion through the filter paper as a result of the heating operation.

4,382,356

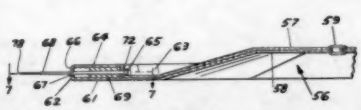
ROTARY-TYPE LAWNMOWER

George C. Ballas, Sr., and Albert W. Mitchell, both of Houston, Tex., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 19,057, Mar. 9, 1979, abandoned, which is a continuation of Ser. No. 786,309, Apr. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 674,323, Apr. 7, 1976, Pat. No. 4,112,653. This application Aug. 5, 1981, Ser. No. 290,250

Int. Cl.³ A01D *55/16*

U.S. Cl. 56—12.7 **39 Claims**



1. In a rotary-type lawnmower having a wheeled chassis adapted to travel over vegetation-covered ground's surface and carrying a prime mower for rotating a downwardly-extending vertical driveshaft, the improvement comprising:

(a) a planar head member mounted on said driveshaft for rotation about a vertical axis relative to the ground's surface;

(b) at least one non-metallic, flexible and elongated cutting pin carried on said head member and each said cutting pin having a tapered free-traveling end portion extending radially outwardly from said head member to a cutting end at a cutting plane which resides substantially perpendicular to the vertical axis;

(c) mounting means for releasably securing each cutting pin by an enlarged part within aperture means located adjacent the periphery of said head member; and

(d) support means on said head member for supporting each cutting pin against vertical deflection of said free-traveling end portion resulting from contact with vegetation being cut, whereby said cutting end on said free-traveling end portion of each said cutting pin remains in the cutting plane for cutting vegetation at a uniform height above the ground's surface.

4,382,357

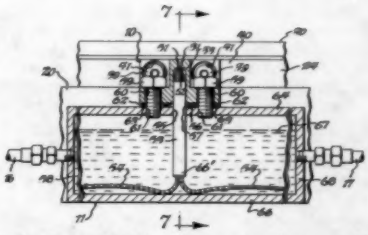
SPINNING AND TWISTING RING CONSTRUCTION AND SYSTEM

James N. McLean, Tonawanda, N.Y., assignor to Herr Manufacturing Company, Inc., Tonawanda, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,746

Int. Cl.³ D01H *7/62*

U.S. Cl. 57—120 **9 Claims**



1. A spinning and twisting ring construction comprising a holder, a ring in said holder, an annular conduit in said ring, a first wick-receiving bore in said ring extending transversely to said annular conduit, a second wick-receiving bore in said holder in alignment with said first wick-receiving bore, a wick adapter block connected to said holder, a third wick-receiving bore in said wick adapter block in alignment with said second wick-receiving bore, and a wick-receiving conduit extending outwardly from said wick adapter block.

4,382,358

STRING OF A VINYLIDENE FLUORIDE SYNTHETIC RESIN COMPOSITION

Günther Tappe, Troisdorf-Sieglar; Bertram Gasper, Troisdorf-Spich; Herbert Laubenberger, and Richard Weiss, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 15, 1981, Ser. No. 302,614

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037457; Oct. 3, 1980, 8026503[U]

Int. Cl.³ C08L *27/16*

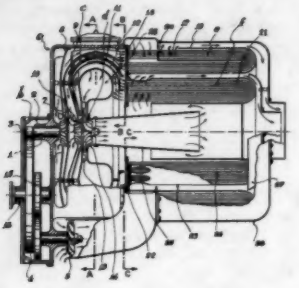
U.S. Cl. 57—243 **13 Claims**

1. A string for the stringing of rackets, bows, musical instruments and the like, comprising a thread-like structure having at least one monofil of a synthetic resin mixture containing 99–86% by weight of polyvinylidene fluoride and 1–14% by weight of at least one polyacrylate selected from the group consisting of a polyacrylate homopolymer, a copolymer of vinylidene fluoride monomer with at least one acrylate monomer, and mixtures thereof, which is stretch-oriented to impart improved elasticity thereto; said monofil exhibiting an attenuation between −20° C. and 30° C. that closely approaches that of natural gut string.

4,382,359
GAS TURBINE ENGINE

Eduardo A. Sampayo, Ministro Brin 3674, Lanus Oeste, Provincia de Buenos Aires, Argentina

Filed Jan. 27, 1981, Ser. No. 229,015
Int. Cl.³ F02C *7/10*
U.S. Cl. 60—39.511 **7 Claims**



1. A gas turbine engine, comprising a compressor with a compressed air cooler between stages and a turbine with a heat recuperator for exhaust gases, characterized by the fact that the air cooler is formed by a set of parallel tubes joined at both ends to a first flange and uniformly distributed so as to form a hollow body in the inner part of which the heat recuperator is housed, said heat recuperator being formed by a set of parallel tubes joined at both ends to a second flange, both flanges being joined to each other and to the body of the engine, the compressor and the turbine comprising a shell assembly having plural shells arranged one within the other and fixed to the body of the engine, said shells forming the diffusers of the compression stages with their free ends supported on the flanges of the heat exchangers and hermetically closing the different compressed air chambers therein, each annular space so described coinciding with the corresponding inlet and outlet areas of compressed air in the cooler and in the heat recuperator, and housed within said shell assembly are: a distribution chamber for combustion gases connected to a flame tube, turbine nozzles, and a rotor assembly formed by the rotors of the compressor and of the turbine assembled on a single shaft and coupled to an output shaft by means of a reduction gear box joined to the body of the engine.

4,382,360
UNLOADING ARRANGEMENT FOR HYDRAULIC SWING CIRCUIT OR THE LIKE

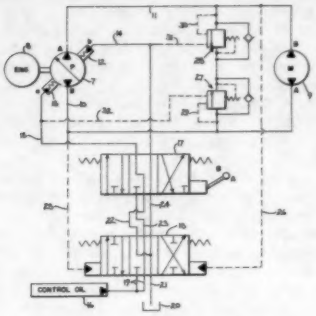
Robert E. Dummer, Greenfield, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Sep. 15, 1980, Ser. No. 187,579
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—444 **8 Claims**

1. In a hydraulic circuit having a reversible pump, a bi-directional hydraulic motor, at least one main line connecting the pump and motor that serves as a pressure line for delivering fluid from the pump to the motor when the pump and motor are operating in one direction and that serves as a return line for returning fluid from the motor to the pump when the pump and motor are operating in the other direction, at least one relief valve associated with the main line that has a primary actuating connection with the main line to be opened in response to pressure in said main line that exceeds a predetermined maximum system pressure, and a control circuit for the pump including at least one control line that is connected to the pump and can be pressurized to stroke the pump toward a position for accepting return flow from the motor when there is a coasting load on the motor,

the improvement wherein:

there is a secondary actuating connection between said control line and said relief valve that is cumulative with said main actuating connection so that when said main line

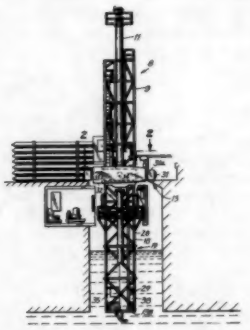


is returning fluid during a coasting action the relief valve will open at a predetermined maximum coasting pressure that is lower than said maximum system pressure and that represents inability of the pump to accept additional return flow from the motor.

4,382,361
OCEAN FLOOR DREDGE SYSTEM HAVING A PNEUMOHYDRAULIC MEANS SUITABLE FOR PROVIDING TRIPPING AND HEAVE COMPENSATION MODES

James Blanchet, Arlington, Wash., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed May 6, 1980, Ser. No. 147,151
Int. Cl.³ B66D *1/48*
U.S. Cl. 60—415 **12 Claims**



11. Pneumohydraulic means designed to provide a heavy lift mode and a heave compensation mode, the pneumohydraulic means comprising: an hydraulic cylinder; an hydraulic piston slidable and sealably movable within the cylinder and dividing the cylinder into upper and lower portions; an hydraulic pressure source in fluid pressure connection with the upper and lower portions of the cylinder for providing hydraulic fluid under pressure to the upper and lower portion of the cylinder; valve means intermediate each of the lower portion of the cylinder and the source, respectively, for filling and evacuating the upper portion of the cylinder; a pneumohydraulic accumulator means in fluid pressure connection with the lower portion of the cylinder; valve means intermediate the accumulator means and hydraulic means; and continuously open drain

means to drain hydraulic fluid from the upper portion of the cylinder during the heave compensation mode to maintain a predetermined level of fluid therein;

whereby the cylinder can be operated to provide a heavy lift mode of operation and can provide heave compensation by evacuating the upper portion of the cylinder and connecting the lower portion to the accumulator means.

4,382,362

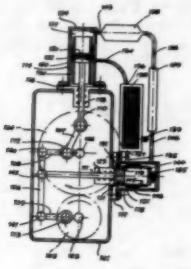
EXTERNAL COMBUSTION ENGINE

Antonius M. Mortel; Peter J. Mortel; Henry F. Mortel; Anthony F. Mortel, and Frederick H. Mortel, all of 70 Austral St., Kogarah, New South Wales 2217, Australia

Filed Aug. 25, 1980, Ser. No. 180,599

Int. Cl.³ F02G *1/02*

U.S. Cl. 60—517 **11 Claims**



1. A Stirling cycle engine having at least one power piston reciprocating in a cylinder and at least one displacer piston reciprocating in a cylinder, heating means located at or adjacent the upper end of the power cylinder, a first conduit connecting the upper ends of the power cylinder and the displacer cylinder, and wherein the walls of each cylinder are provided with ports which are uncovered by movement of the piston therein toward the bottom end of the piston stroke, the ports of the power piston cylinder being connected to the ports of the displacer cylinder by a second conduit incorporating cooling means arranged to cool the working fluid passing through said conduit.

4,382,363

STIRLING ENGINE DISPLACER SUSPENSION SYSTEM

Jeffrey S. Rauch, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,893

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—520 **6 Claims**

1. In a free piston Stirling engine having a vessel defining therein a working space adapted to contain a working gas under pressure and a displacer mounted in said working space for oscillation therein to displace working gas through a heater, a regenerator and a cooler to create a cyclic pressure wave in said working gas, the improvement comprising an improved displacer mounting system including:

a rigid wall extending transversely across one end of said displacer and defining one wall of a cavity adapted to be filled with an incompressible liquid;

a diaphragm having its outer peripheral edge sealed to said vessel and extending transversely across said displacer generally parallel to said wall and defining another wall of said cavity;

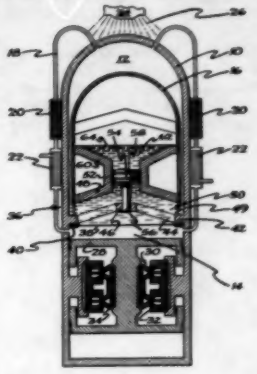
means for sealing said displacer to said diaphragm while permitting axial movement of said displacer;

support means extending laterally across said cavity therewithin for axially supporting a piston;

means defining a cylinder in said rigid wall;

said piston supported axially on said support means and disposed in said cylinder, said piston having one face extending across said cylinder and forming a portion of said one cavity wall;

whereby the pressure wave in said engine is exerted against said diaphragm which transmits said pressure through said



liquid to said rigid wall, and said cylinder moves relative to said piston when said displacer moves axially in said working space to maintain the volume in said cavity approximately equal at all positions of said displacer so that pressure stresses in said diaphragm are minimized.

4,382,364

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

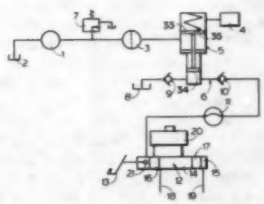
Alfred W. Thomas, Koblenz, Fed. Rep. of Germany, and Anthony W. Harrison, Birmingham, England, assignors to Girling Limited, Birmingham, England

Continuation-in-part of Ser. No. 7,215, Jan. 29, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,797

Claims priority, application United Kingdom, Jan. 31, 1978, 3783/78

Int. Cl.³ B60T *7/00*

U.S. Cl. 60—567 **7 Claims**



1. A power system for a vehicle comprising at least one pressure converter which takes energy from one system at a first pressure and converts said energy into energy at a second pressure in a second system, said pressure converter being operative when said one system is operative, a power source of hydraulic pressure fluid for supply to said pressure converter, a sub-system provided with hydraulic fluid which is adapted to be pressurised by said pressure converter, said fluid supplied to said converter by said power source being separated from said hydraulic fluid of said sub-system by said pressure converter, a booster operable in response to pressure in said sub-system, for providing an output pressure, a master cylinder to operate ancillary equipment, said output pressure being augmented by said pressure converter by means of a force generated by said

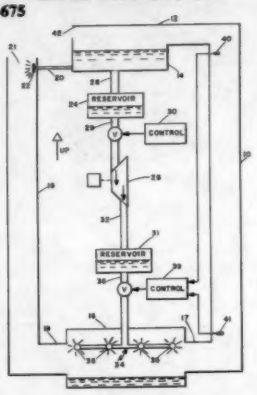
booster in response to said pressure in said sub-system, and an hydraulic accumulator incorporated in a line between said converter and said booster.

4,382,365

ENERGY CONVERSION DERIVED FROM PRESSURE AND TEMPERATURE DIFFERENTIALS AT DIFFERENT ELEVATIONS

Gene S. Kira, 1543 Gascony Rd., Leucadia, Calif. 92024, and Jens O. Sorensen, El Acebo, P.O. Box 2274, Rancho Santa Fe, Calif. 92067, assignors to Gene Sadao Kira, Leucadia and Jens Ole Sorensen, Rancho Santa Fe, both of, Calif.

Filed Jun. 4, 1980, Ser. No. 156,274
Int. Cl.³ F03G *7/02, 7/04*
U.S. Cl. 60—675 **24 Claims**



1. A method of thermal energy conversion, comprising the steps of:

(a) providing a solution of a liquid in a gas at a predetermined low elevation;

(b) transporting the solution in a first conduit to a predetermined high elevation, whereby the absolute pressure and the temperature of the solution change;

(c) separating some of the liquid out of the solution in the first conduit in the form of particles suspended in the remaining solution to create a mixture of the separated particles and the remaining solution in the first conduit as a result of said changes in absolute pressure and temperature, so that at any particular position in the first conduit where the separation takes place, the average proportional density of the mixture after the separation has taken place is decreased in relation to the density of the solution at said position prior to the separation taking place;

(d) transporting the mixture through the first conduit into a separation chamber at the high elevation in response to pressure differentials created by the decrease in average proportional density of the mixture in the first conduit;

(e) separating at least a portion of the suspended particles from the mixture in the separation chamber to create a separated liquid, and a dried gas; and

characterized by

(f) transporting the separated liquid through a second conduit to a transducer at a lower elevation than the high elevation; and

(g) converting the pressure and motion of the transported separated liquid into a useful form of energy; and

(h) providing a second solution of a liquid and a gas in a conditioning chamber connected to the first conduit at the low elevation;

(i) conditioning the second solution at the low elevation to create the first-mentioned solution for transportation in the first conduit under conditions that tend to increase the created pressure differential in the first conduit; and

further characterized by the steps of:

(j) solar heating the first mentioned solution, the second solution and/or the injection liquid to decrease the density of the first-mentioned solution to thereby increase the pressure differential in the first conduit; and

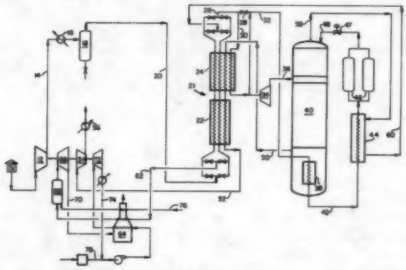
(k) mixing a dye with the gas, liquid and/or solution to enhance the absorption of sunlight.

4,382,366

AIR SEPARATION PROCESS WITH SINGLE DISTILLATION COLUMN FOR COMBINED GAS TURBINE SYSTEM

Lee S. Gaumer, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 7, 1981, Ser. No. 328,325
Int. Cl.³ F25J *13/02*
U.S. Cl. 62—31 **7 Claims**



1. A process for separating high purity oxygen from air in a single pressure distillation column comprising the steps of:

(a) compressing an air feed stream wherein the compressor is powered by a gas turbine,

(b) cooling the air feed stream in a reversing heat exchanger against a nitrogen waste stream from said column and an oxygen product stream,

(c) separating a side air feed stream from a remaining air feed stream and passing the side stream back through the heat exchanger to provide a temperature unbalance to preclude carbon dioxide and water buildup in said exchanger,

(d) expanding and cooling the side stream in a turbine before introducing said stream into an intermediate point of said column,

(e) heat exchanging the remaining air feed stream with the liquid phase of the bottom of said column to condense said stream and reboil said liquid,

(f) further heat exchanging the remaining air feed stream against the overhead product stream of said column before introducing said feed stream as reflux into the top of said column,

(g) removing, at pressure, a nitrogen waste stream containing a combustible level of oxygen from the top of said column as the overhead product stream of step (f),

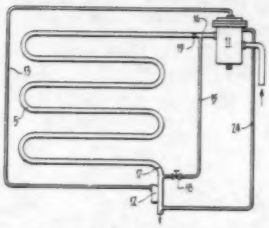
(h) combusting said pressurized nitrogen waste stream with a fuel to provide a hot pressurized gas feed to said gas turbine of step (a),

(i) removing a high purity oxygen product stream from the bottom of said column and pressurizing the same by a compressor driven by a steam turbine wherein said steam turbine is provided with steam by a cyclic heat exchange of the steam with the exhaust of the gas turbine.

4,382,367
CONTROL OF VAPOR COMPRESSION CYCLES OF REFRIGERATION SYSTEMS

Ian D. Roberts, Victoria, Australia, assignor to The University of Melbourne, Victoria, Australia

Filed Aug. 4, 1981, Ser. No. 289,984
Claims priority, application Australia, Aug. 5, 1980, PE4869
Int. Cl.³ F25B 41/00
U.S. Cl. 62—197 10 Claims

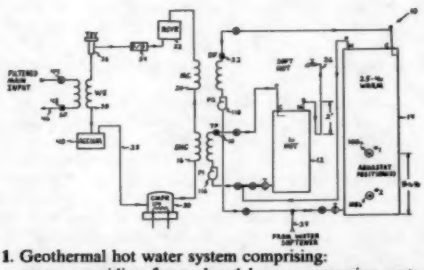


1. A refrigeration system including an evaporator controlled by an expansion valve having means for sensing the temperature or vapour dryness at the downstream end of the evaporator, characterized by means for injecting wet vapour at a rate which is a function of the rate of flow of refrigerant through the expansion valve into said evaporator upstream of said temperature sensing means.

4,382,368
GEOTHERMAL HOT WATER SYSTEM

Edward W. Dittell, 184 NE. 71st Way, Minneapolis, Minn. 55432

Filed Mar. 20, 1981, Ser. No. 246,005
Int. Cl.³ F25B 27/02
U.S. Cl. 62—238.6 7 Claims



1. Geothermal hot water system comprising:

a. means providing for a closed loop compression system including evaporator means for heating of condensing gases of said closed loop system and a plurality of condensers serially connected in said system to condense said gases, super heated condenser connected to one side of said closed loop system and main condenser serially connected to said super heated condenser in same side of said system;

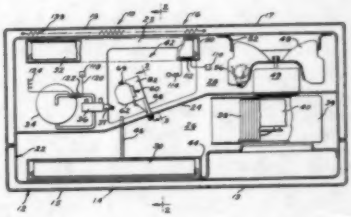
b. means for storing plurality of quantities of water at predetermined temperatures, said plurality of storage means connected to said plurality of condensers respectively, and said storage means connected in a serial relationship, said storing means including a serially connected warm water tank in a first open loop system and a hot water tank in a second open loop system, both of said open systems for warm and hot water; and,

c. means for pumping water about said closed loop system to said evaporator means for thermal exchange in said compression system means and means distributing water in said open loop ground water system to said storage means whereby heat is provided from said closed loop system through said compression system means to said storage system means through said condensers thereby providing heat to water in said storage system means with least consumption of energy by said closed loop compression system and whereby serial connection of said super heated condensor and said main condensor provides for heating of said open loop water systems.

4,382,369
AIR CONDITIONING APPARATUS

George E. Stocking, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 8, 1981, Ser. No. 299,913
Int. Cl.³ F25B 47/00
U.S. Cl. 62—280 3 Claims



1. A self-contained refrigeration heat pump air conditioning unit operable in a heating and cooling cycle for conditioning the air of an enclosure comprising:

a chassis including a base member and a barrier dividing said chassis into an indoor compartment and an outdoor compartment;

indoor and outdoor heat exchangers mounted respectively in said indoor and outdoor compartments;

an indoor air moving means for recirculating enclosure air through said indoor compartment;

an outdoor air moving means for circulating air through said outdoor compartment;

a compressor mounted in said outdoor compartment;

means for selectively connecting said compressor to said heat exchangers whereby said outdoor heat exchanger functions as an evaporator during operation of the unit on the heating cycle and said indoor heat exchanger functions as an evaporator during the cooling cycle;

a condensate collection sump in said outdoor compartment formed in said base member being arranged to collect condensate from said indoor and outdoor heat exchangers;

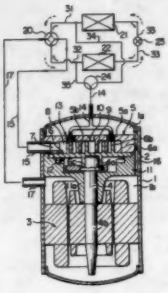
means for directing condensate formed on said indoor and outdoor heat exchangers into said sump; and

condensate disposal means arranged in said oudoor compartment including a housing, passageway means connected to said housing at one end and having an outlet at the other end positioned in an opening in said barrier so as to communicate with the indoor compartment, condensate lifting means arranged on said housing including disc means operable in the heating cycle for lifting condensate from said sump and directing it into said passageway means and through said outlet in said indoor compartment into the path of air being circulated by said indoor fan where it is vaporized and directed through the relatively warm indoor heat exchanger functioning as a condenser in said heating cycle.

4,382,370
REFRIGERATING SYSTEM USING SCROLL TYPE COMPRESSOR

Kazutaka Suefuji; Tetsuya Arata, both of Shimizu; Yoshikatsu Tomita, Shizuoka; Sumihisa Kotani, Shimizu; Naoshi Uchikawa, Shimizu, and Akira Murayama, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,496
Claims priority, application Japan, Oct. 31, 1980, 55-152073
Int. Cl.[3] F25B *13/00*
U.S. Cl. 62—324.1 13 Claims



1. A refrigerating system comprising:

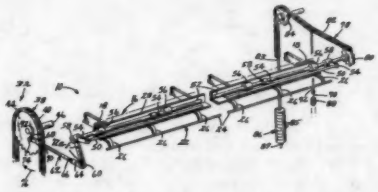
a scroll type compressor comprising a stationary scroll member formed with a discharge port, an orbiting scroll member in meshing engagement with said stationary scroll member in such a manner that the orbiting scroll member moves in orbiting movement with respect to said stationary scroll member without rotating on its own axis while a suction chamber and compression chambers are defined between said two scroll members, and at least one volume control mechanism comprising a bypass passageway communicating said suction chamber with said compression chambers, and a valve member mounted in said bypass passageway and movable between a normally open position and a closed position in which the valve member closes the bypass passageway, said valve member having axial one end exposed to pressurized fluid in said bypass passageway; and

a refrigeration circuit comprising discharge line communicated with said discharge port, a suction line communicated with said suction chamber, first and second heat exchangers, a series line connecting said first and second heat exchangers in series with each other, an expansion valve mounted in said series line, a first branch line connected to said first heat exchanger, a second branch line connected to said second heat exchanger, first valve means movable between a first position where said discharge line is communicated with said first branch line and said second branch line is communicated with said suction line to allow a working fluid to flow from said compression chambers to said suction chamber through said first heat exchanger, said expansion valve, said second heat exchanger and said suction line and a second position where said discharge line is communicated with said second branch line and said first line is communicated with said suction line to allow the working fluid to flow from said compression chamber to said suction chamber through said second heat exchanger, said expansion valve, said first heat exchanger and said suction line, and second valve means movable between a first position where pressurized fluid in said first branch line is introduced to axial the other end of said valve member in said bypass passageway and a second position where pressurized fluid in said second branch line is introduced to said axial the other end of said valve member in said bypass passageway, whereby said valve member in said bypass passageway can be made to move between said open position and said closed position by the pressure differential between the pressures applied to said axial one end and said axial the other end of said valve member in said bypass passageway.

4,382,371
METHOD AND APPARATUS FOR PRODUCING PATTERNING EFFECT ON KNITTED FABRIC

David Dale, and Robert C. Barksdale, both of Hamilton, Ala., assignors to Munsingwear, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 963,310, Nov. 24, 1978, Pat. No. 4,235,083. This application Sep. 8, 1980, Ser. No. 185,191
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] D04B *27/12*
U.S. Cl. 66—213 14 Claims



1. An attachment for a warp knitting machine for producing a patterned effect on fabric knitted by the warp knitting machine, the warp knitting machine having at least one warp beam for supplying threads to be knitted, thread separating means for separating threads supplied from said warp beam, means for knitting the threads supplied from said warp beam, and first tensioning means positioned between said warp beam and said knitting means for tensioning the threads being supplied to said knitting means, said attachment comprising:

movable supplemental tensioning means operatively connected to said knitting machine for cyclically varying the tension on first and second groups of threads disposed on opposite sides of said supplemental tensioning means, said supplemental tensioning means including a single tensioning member disposed between the warp beam and the first tensioning means and having a sufficient length for tensioning all of the threads being supplied from said warp beam; and

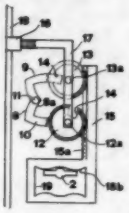
means for cyclically moving said supplemental tensioning means in first and second opposite directions about a neutral position whereby the tension on the first group of threads disposed on one side of the supplemental tensioning means increases when the supplemental tensioning means moves in the first direction away from the neutral position and the tension on the second group of threads disposed on the other side of the supplemental tensioning means increases when the supplemental tensioning means moves in the second direction away from the neutral position, said moving means including a rotatable rod, first linkage means connecting said rod to said tensioning member, means for rotating said rod including a second linkage means attached to said rotatable rod adjacent a first end thereof and a drive arm connecting said second linkage means attached to a drive member of the knitting machine, and torque compensating means for equalizing torque applied to said rotatable rod along its length including means for biasing said rotatable rod in a rotational direction, said biasing means being coupled to a second end of said rotatable rod opposite said first end of said rotatable rod, said biasing means including a counterweight system movably attached to said second end of said rotatable rod and distant therefrom, whereby the patterned effect produced on the fabric will be even across the width of the fabric.

4,382,372

SECURITY DEVICE FOR REMOVABLY LOCKING TWO MOBILE ELEMENTS TOGETHER

Sergio Sanvido, Lugano, Switzerland, assignor to Bristol S.A., Luxembourg, Luxembourg

Filed Sep. 15, 1980, Ser. No. 187,592
Claims priority, application European Pat. Off., Apr. 8, 1980, 80101867.2
Int. Cl.³ E05B 25/08
U.S. Cl. 70—355 14 Claims



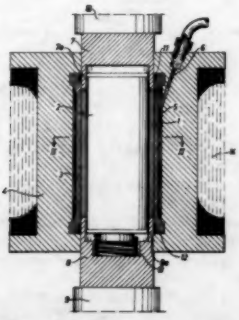
1. In a security device for removably locking two mobile elements together, the device being designed to be fixed to one of the two mobile elements and having a bolt member arranged to be displaced from a locked to an unlocked position and vice versa, at least two actuation keys which differ from one another, control means for allowing the bolt member to be displaced by the actuation keys, and at least one transmission element arranged to operate the control means and to be actuated by either actuation key, the improvement wherein for each transmission element the control means comprises a pair of first and second engagement members movably mounted on respective supports provided on a common adjustable carrier, and a respective matching element for the first and the second engagement member, whereby each one of the actuation keys can cause either the first or the second engagement member or members to match with its respective matching element, thereby allowing the bolt member to be displaced.

4,382,373

APPARATUS FOR CALIBRATING TUBULAR ARTICLES

Björn O. A. Pettersson, Ystad, Sweden, assignor to AB Carbox, Ystad, Sweden

Division of Ser. No. 252,948, Apr. 10, 1981, Pat. No. 4,339,935.
This application Mar. 12, 1982, Ser. No. 357,793
Claims priority, application Sweden, Apr. 15, 1980, 8002833
Int. Cl.³ B21D 39/08
U.S. Cl. 72—57 8 Claims



1. Apparatus for calibrating a tubular article (1) made of a pulverulent metallic material which has undergone isostatic pressing and a subsequent sintering operation, comprising:

an isostatic press which has a central mandrel (2) on which is mounted said tubular article;

means (3, 4) for applying a first press force to said tubular article mounted on said mandrel, said first press force acting radially inwardly towards said mandrel;

means (7, 8) for applying an axially directed force to said tubular article (1) after application of said press force to cause an axially oriented relative movement between said tubular article (1) and said mandrel (2); and

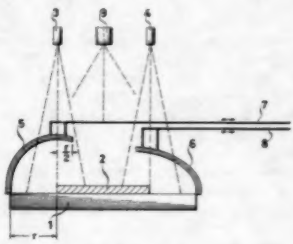
means for applying a second press force to said tubular article after application of said axially directed force, said second press force acting radially inwardly towards said mandrel and being of greater magnitude than said first press force.

4,382,374

METHOD OF, AND APPARATUS FOR, EFFECTING TEMPERATURE-EQUALIZATION OF HOT STEEL STRIP

Hermann-Josef Kopineck; Wilhelm Tappe, and Wolfgang Fabian, all of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,914
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001684
Int. Cl.³ B21B 45/00
U.S. Cl. 72—202 13 Claims



1. Apparatus for effecting uniform temperature distribution over the width of a hot steel strip during rolling, said strip having a center portion and lateral edge portions and traveling from an initial treating station to a subsequent treating station, comprising means for advancing the hot steel strip in a predetermined path linking said stations; and means for partially covering the lateral edge portions of the steel strip; said covering means comprising heat reflectors arranged to surround said edge portions laterally at a predetermined distance from said edge portions, and toward the center of said strip by a distance equal to substantially half said predetermined distance; said reflectors being configurated to resemble portions of a conical section, and having center points located in the region of said lateral edge portions; said portions of conical sections being segments of ellipses, said predetermined distance being equal to the median value of the semi-axes of the ellipses, so that cooling of the edge of the strip is controlled to produce uniform temperature over the total width of the strip.

4,382,375

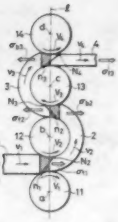
METHOD OF ROLLING METAL STRIP

Hiroyasu Yamamoto, Kitakyushu; Koe Nakajima, Nakama; Minoru Kawaharada, and Yuji Uehori, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 270,123
Claims priority, application Japan, Jan. 14, 1980, 55/2094
Int. Cl.³ B21B 39/08
U.S. Cl. 72—205 5 Claims

1. In a method of rolling metal strip in a rolling mill stand

having at least three work rolls positioned substantially in a line with each other with each pair of adjoining work rolls forming a roll pass therebetween, the pair of work rolls at one end of the line forming an entry pass at an entry end of the stand and the pair of work rolls at the other end of the line forming an exit pass at an exit end of the stand, and which method includes driving the work rolls in the successive positions toward the exit end of the stand at increasingly greater peripheral speeds with each pair of adjoining work rolls having a lower-speed work roll toward the entry end of the stand and a higher-speed work roll toward the exit end of the stand, and feeding the metal strip into the entry pass, around the peripheries of the work rolls positioned between the work rolls at the respective ends of the line and through the rolls at the respective ends of the line and through the roll pass formed between



each pair of adjoining work rolls along the line, the improvement which comprises:

controlling the speed of at least the higher-speed roll forming the entry pass for causing the ratio of the entry speed of the strip to the peripheral speed of the lower-speed work roll in the entry pass to be greater than 0.8 and less than 1; and

driving the work rolls for causing the peripheral speed of the higher-speed work roll in one of the pairs of adjoining work rolls to be greater than the exit speed of the strip from said one of the pairs of adjoining work rolls, and, at the same time, controlling the speeds of the rolls forming all the passes other than the entry pass for causing the ratio of the exit speed of the strip to the peripheral speed of the higher-speed work roll in each such pass to lie between 0.8 and 1.2.

4,382,376

METHODS OF ROLLING WIRE RODS OR BARS

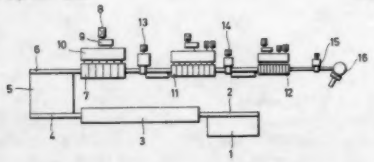
Hans Brauer, Leichlingen, and Werner Demny, Dusseldorf, both of Fed. Rep. of Germany, assignors to Friedrich Kocks GmbH & Co., Hilden, Fed. Rep. of Germany

Continuation of Ser. No. 100,349, Dec. 5, 1979, abandoned. This application Oct. 2, 1981, Ser. No. 308,136

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902788

Int. Cl.³ B21B *39/08*

U.S. Cl. 72—205 **5 Claims**



1. A method of rolling wire, rods or bars in which the cross section of such work material is reduced by first rolling under longitudinal compression in at least one of a roughing and intermediate rolling mill block having at least two spaced roll stands continuously operating at different speeds such that the work is continuously longitudinally compressed during the time it is engaged in said roll stands and thereafter rolling the work material in a finishing rolling mill block, the work material being rolled under longitudinal tension only in the finishing block.

4,382,377

PRESSURE SENSOR FOR AN INTERNAL COMBUSTION ENGINE

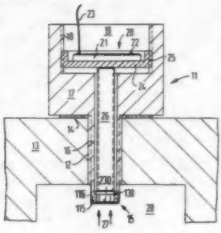
Peter Kleinschmidt, and Valentin Magori, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 5, 1981, Ser. No. 261,283

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018856; Jun. 6, 1980, 3021452

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **19 Claims**



1. A pressure sensor for an internal combustion engine which has an engine wall with a bore therethrough, the wall partially defining an engine cylinder, comprising:

a housing including an elongate, first housing section adapted to be received through the bore and sealed gas-tight to the wall, said section including a first end to be positioned within the cylinder and a membrane at said first end continuous with said housing to be subjected to the pressures within the cylinder, and a second housing section including means defining a threaded recess;

a pressure/electrical transducer threadedly mounted in the housing recess including output signal connections and responsive to forces applied thereto to produce corresponding output signals; and

a force connection element mechanically coupled between said membrane and said transducer.

4,382,378

METHOD FOR TESTING FILTRATION EFFICIENCY

Larry C. Wadsworth, Arlington, Tex., and Wayne T. Davis, Knoxville, Tenn., assignors to Surgikos, Inc., New Brunswick, N.J.

Filed Mar. 20, 1981, Ser. No. 245,815

Int. Cl.³ B01D *23/00*

U.S. Cl. 73—38 **5 Claims**

1. A method of determining the filtration efficiency of a filtration medium comprising:

(a) suspending in an airstream a uniform latex of polymeric microspheres in water;

(b) directing the suspended latex microspheres through an empty filter holder;

(c) drying the airstream to remove the liquid portion of the latex;

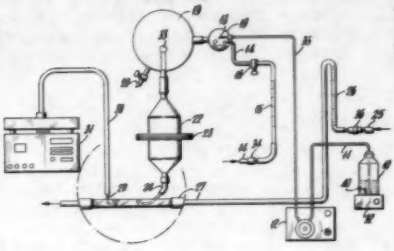
(d) directing a portion of the air stream through a particle counter to determine the number of particles in the air stream;

(e) inserting a filtration medium in the filter holder;

(f) directing the suspended latex microspheres through the filter holder containing the filtration medium;

(g) drying the airstream to remove the liquid portion of the latex;

(h) directing a portion of the air stream through a particle counter to determine the number of particles in the air



stream; whereby the efficiency of the filtration medium can be determined by comparing the particles counted with the filtration medium in the filter holder and the particles counted without the filtration medium in the filter holder.

4,382,379

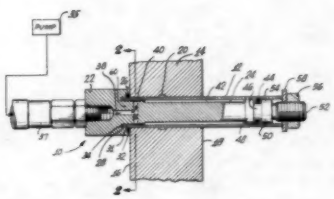
LEAK DETECTION APPARATUS AND METHOD FOR USE WITH TUBE AND TUBE SHEET JOINTS

John W. Kelly, Burbank, Calif., assignor to Haskel Engineering and Supply Co., Burbank, Calif.

Filed Dec. 22, 1980, Ser. No. 218,670

Int. Cl.³ G01M *3/04*

U.S. Cl. 73—46 **11 Claims**



1. An apparatus for pressurized leakage testing of a tube and tube sheet joint comprising:

a head having an end surface for engaging a first face of said tube sheet in the vicinity of said tube;

a mandrel extending from said head for insertion in said tube so as to define a generally annular fluid-flow space between said mandrel and said tube;

a fluid supply conduit extending into said mandrel and opening through said mandrel to communicate with said fluid-flow space;

outer seal means carried by said head for engaging said first face of said tube sheet to confine a test fluid;

inner seal means carried by said mandrel for engaging the inner surface of said tube and thereby preventing said test fluid from escaping from a first end of said tube; and

securement means for engaging said first end of said tube and thereby retaining said mandrel in said tube;

whereby said test fluid can flow from said fluid-flow space toward said head, around a second end of said tube and, if said joint is not leak-proof, can pass between said tube and said tube sheet to emerge and be detected at a second face of said tube sheet opposite said first face.

4,382,380

PLANT WATERING INDICATOR

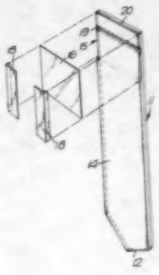
Charles Martin, 11 Troon Ct., Greenhills, East Kilbride, Great Britain

Filed Sep. 23, 1980, Ser. No. 189,562

Claims priority, application United Kingdom, Sep. 26, 1979, 7933394

Int. Cl.³ G01N *33/18, 33/24*

U.S. Cl. 73—73 **12 Claims**



1. Apparatus for indicating when a plant requires to be watered comprising, a member insertable into the soil, said member having a layer of hygroscopic material disposed thereon wherein said hygroscopic material is mixed in a mixture with a material having adhesive properties, said mixture retaining the hygroscopic properties of said hygroscopic material, said layer being covered at least in part by a light transmissive cover, and said layer having a discontinuity therein for preventing evaporation of water from the layer located beneath said cover.

4,382,381

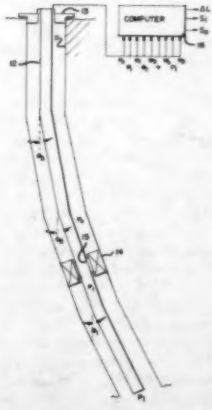
DETERMINING STRESSES AND LENGTH CHANGES IN WELL PRODUCTION TUBING

Edy Soeiinab, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,452

Int. Cl.³ E21B *47/024*

U.S. Cl. 73—151 **10 Claims**



1. The method of determining the length change of a string of tubing in a vertical or deviated well caused by fluid flow

through said tubing during production or stimulation of the well comprising:

measuring the fluid pressure where it enters said tubing;

for successive sections of said tubing, determining the actual force applied to said tubing from said fluid pressure acting upon the cross-sectional area of said tubing;

measuring the inclination of said sections of said tubing;

determining the weight of each section;

resolving the weight of each section into the axial component applied to the next successive segment, said axial component being related to the measured inclination of the sections;

for each of said successive sections, determining the buckling force from said actual force and said axial component of weight;

comparing said buckling force to a threshold to determine if there is buckling of said tubing;

determining the length change of said tubing between the initial condition and the condition of fluid flow in said tubing caused by the pressure and temperature of said fluid and caused by buckling if it is present as determined from the preceding step; and

producing an output indicating the change in length of said tubing.

4,382,382

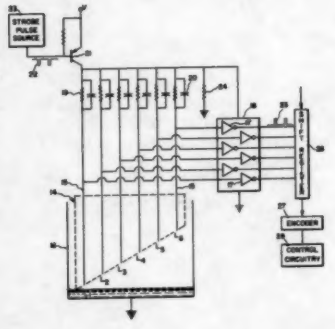
MULTILEVEL LIQUID SENSING SYSTEM

Jish M. Wang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 90,360, Nov. 1, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,166

Int. Cl.³ G01F *23/00*

U.S. Cl. 73—304 R **4 Claims**



1. a multilevel liquid level sensing system comprising:

a flat cable sensing probe assembly having a plurality of probe conductors whose lower ends are at different discrete levels in a container for liquids;

resistance bridges each comprised of a pair of said probe conductors connected with three fixed value resistors, the third resistor so that the state of the bridge is known with both probe conductors out of the liquid;

means for supplying a train of low duty cycle dc interrogation pulses in parallel to said resistance bridges and hence to said probe conductors;

integrated circuit voltage comparator signal detectors each of which has a binary output and inverting and noninverting inputs connected across one of said resistance bridges such that the output is in one state when the lower ends of both probe conductors are in or out of the liquid, and is in the other state when the lower end of one probe conductor is in the liquid and the lower end of the other probe conductor is out of the liquid, said binary outputs in combination indicating the different discrete liquid levels;

storage means for said binary outputs which are read out between said interrogation pulses to timing logic means to achieve a continuous liquid level control;

said timing logic means comprising a timer which measures the time for the liquid to rise or fall between two adjacent discrete levels, and a flow rate calculator which monitors the flow rate of liquid between the two discrete levels.

4,382,383

PIPE INSPECTION DEVICE

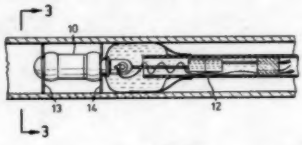
Eric G. de Buda, 55 Humberview Rd., Toronto, Ontario, Canada (M6S 1W7), and Anthony L. Allen, 2335 Lakeshore Blvd., West, Apt. 406, Toronto, Ontario, Canada (M8V 1B9)

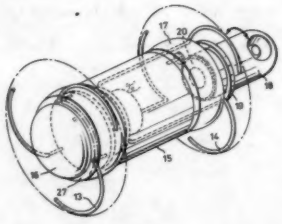
Filed May 4, 1981, Ser. No. 260,013

Claims priority, application Canada, Feb. 25, 1981, 371677

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—592 **7 Claims**





1. An inspection device for use in scanning the interior of a pipe, comprising:

a cylindrical housing defining a central axis,

a first end portion mounted at one end of the housing coaxially therewith,

a second end portion mounted at the other end of the housing coaxially therewith,

a scanning probe journalled in said second end portion for rotation about said central axis, the probe extending axially from the second end portion,

drive means mounted within the housing, said drive means being coupled to the probe for effecting rotation thereof, and

means for centering the device coaxially within a pipe, said means comprising:

a plurality of identical spider arms pivotally connected to the device for pivotal movement about respective pivotal axes parallel to and spaced symmetrically about said central axis,

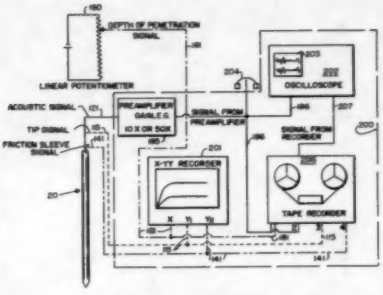
a drive motor mounted within the housing, and

coupling means connected between the motor and the spider arms for effecting pivotal movement of the arms, said motor being capable of selectively extending and retracting said spider arms between radially extended and retracted positions and said coupling means constraining the spider arms to move pivotally in unison between said radially extended and retracted positions.

4,382,384
ACOUSTIC PENETROMETER FOR SUBSOIL INVESTIGATION

James K. Mitchell, Moraga; Willem C. B. Villet, Berkeley; Philip T. Tringale, Moraga, and Clarence K. Chan, San Francisco, all of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Jun. 15, 1981, Ser. No. 273,946
Int. Cl.³ G01N *19/02, 3/42*
U.S. Cl. 73—594 22 Claims



1. A quasi-static cone penetrometer for subsoil investigation by simultaneously generating three sets of data, namely cone tip penetration resistance, friction sleeve resistance, and acoustical information, all as a function of depth, said penetrometer comprising

a body assembly with a substantially cylindrical outer surface and terminating in a cone at its lower end, said body assembly having

a cone tip,

a friction sleeve above said cone tip,

propelling means for advancing said body assembly into soil,

first load-responsive means connected to said tip, for measuring tip load,

second load-responsive means connected to said friction sleeve, for determining friction sleeve load, said first and second load responsive means extending through said rod means,

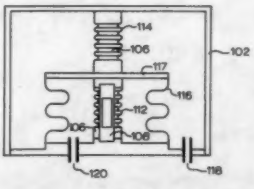
an acoustic transducer in contact with an area of said body assembly responsive to acoustical input generated by the body assembly moving through the soil, and

a lead from said acoustical transducer, extending up through said body assembly to the upper end of said penetrometer.

4,382,385
DIGITAL DIFFERENTIAL PRESSURE TRANSDUCER

Jerome M. Paros, Redmond, Wash., assignor to Paroscientific, Inc., Redmond, Wash.

Filed Apr. 17, 1980, Ser. No. 140,958
Int. Cl.³ G01L *11/00*
U.S. Cl. 73—702 16 Claims



12. A digital differential pressure sensor, comprising:

an airtight enclosure having first and second pressure ports;

a pressure sensing bellows mounted within said enclosure, said bellows extending from a portion of said housing to a bellows end cap, the interior of said bellows communicating with said first pressure port and the exterior of said bellows communicating with said second pressure port;

a first bellows having an effective area substantially smaller than the effective area of said pressure sensing bellows, said first bellows extending along the axis of said pressure sensing bellows and having one end secured to one face of said end cap and the other end secured to a portion of said housing;

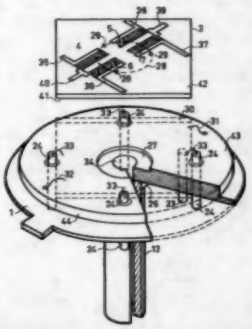
a second bellows having an effective area substantially equal to the effective area of said first bellows, said second bellows being concentrically encapsulated by said pressure sensing bellows with one end secured to the opposite face of said bellows end cap and the other end secured to a portion of said housing; and

a stress-sensitive resonator mounted within one of the said first and second bellows and having respective ends secured to said bellows end cap and said housing such that the pressure differential at said first and said second pressure ports imparts a force to said bellows end cap which is measured by said stress-sensitive resonator while one of said first and second bellows isolates said resonator from said first and second pressure ports and the other of said first and second bellows compensates therefor.

4,382,386
ELASTIC SURFACE WAVE PRESSURE GAUGE AND PRESSURE SENSOR FOR SUCH A GAUGE

Gerard Coussot, and Pierre Texier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 25, 1980, Ser. No. 190,893
Claims priority, application France, Sep. 28, 1979, 79 24226
Int. Cl.³ G01L *11/00*; H01L *41/10*; G01L *9/06*
U.S. Cl. 73—703 13 Claims



1. An elastic surface wave pressure gauge comprising:

a plug-in unit including two delay lines formed by interdigitated comb shaped transducer electrodes placed on a first main face of a piezoelectric wafer, the wafer resting by its second main face on the periphery of a chamber communicating with a pressure inlet, and

two amplifier circuits oscillating at two different frequencies, one amplifier being connected to each delay line, the difference between these two frequencies being detected by a mixer stage which supplies a measuring signal indicative of a pressure within said chamber,

the amplifier circuits and the mixture stage being mounted on a circuit board having a ground plane and provided with connections surrounding an orifice providing a passage for the pressure inlet,

the pressure inlet being being formed as part of the plug-in

unit and being constituted by a metal pipe fixed to a rigid metal header, whose periphery is provided with pins which are inserted in said connections, the pins and metal pipe extending outwardly from the piezoelectric wafer, said header having a support for the piezoelectric wafer between the pins, this support having a central depression communicating with the pipe, the metal pipe and header being electrically connected with the ground plane of the board to provide electrical shielding for minimizing pull-in between the two amplifier circuits oscillating at different frequencies.

4,382,387

METHOD OF COMPENSATING THE INTERFERENCE DC VOLTAGES IN THE ELECTRODE CIRCUIT IN MAGNETIC-CONDUCTIVE FLOW MEASUREMENT

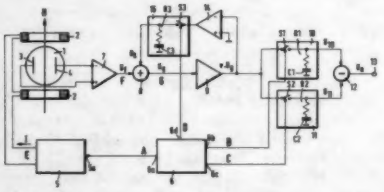
Peter Hafner, Therwil, Switzerland, assignor to Flowtec AG, Reinach, Switzerland

Filed Apr. 16, 1981, Ser. No. 254,634

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037283

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.17 4 Claims



1. A method of compensating the interference DC voltages in the electrode circuit in magnetic-conductive flow measurement with periodically reversed DC magnetic field in which the useful signal is obtained by sampling and storing the signal voltage after each reversal of the magnetic field at opposite polarity values of said magnetic field during a sampling time interval and forming the difference of the stored sampled values, and wherein in a compensating time interval following each sampling time interval a compensation voltage is produced by sampling and storing the signal voltage, which compensation voltage is superimposed oppositely on the signal voltage for compensating the signal voltage within the compensation time interval to the value zero and is retained until the next compensation time interval, wherein each compensation time interval lies within the time interval corresponding to the switched-on magnetic field, in which also the preceding sampling time interval lies.

4,382,388

DYNAMOMETER ROAD SIMULATING METHOD AND SYSTEM

Masamichi Ono, Yokohama, Japan, assignor to Kabushiki Kaisha Ono Sokki, Japan

Filed Oct. 15, 1980, Ser. No. 197,201

Claims priority, application Japan, Oct. 31, 1979, 54-141636; Oct. 31, 1979, 54-141637

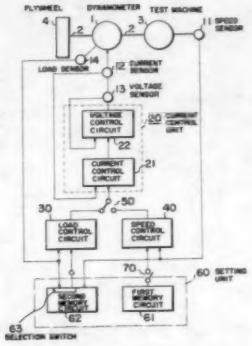
Int. Cl.³ G01L *3/22*; G01M *15/00*

U.S. Cl. 73—861.18 2 Claims

1. A method of operating a test vehicle under a reproduced road load by using a dynamometer having the same inertia moment as that of said test vehicle, said test vehicle having a vehicle wheel drivingly associated with said dynamometer and connected through a transmission gear unit to a vehicle engine, said method comprising the steps of:

(a) storing road test data having decreasing values of vehicle speed in relation to corresponding values of elapsed time while coasting said vehicle under actual running conditions after the vehicle speed has been increased to a predetermined value, the vehicle being driven along a predetermined road course;

(b) with the vehicle connected to the dynamometer and said vehicle wheel disconnected from said vehicle engine, controlling the speed of rotation of said dynamometer in accordance with the decreasing speed values in said road test data after the dynamometer has been driven to a speed at least equal to a speed corresponding to said predetermined value;



(c) during step (b), storing simulation data having values of the load exerted on said dynamometer in relation to values of corresponding speed of rotation of said dynamometer; and

(d) with the vehicle connected to the dynamometer and said vehicle wheel driven by said vehicle engine, simulating a road test by detecting the speed of rotation of said dynamometer and controlling the load of said dynamometer in accordance with the corresponding load values in said simulation data.

4,382,389

RACK AND PINION GEARING

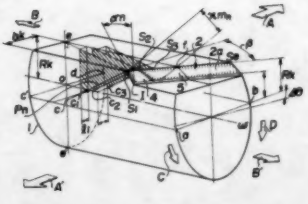
Ko Namiki, Sakado; Tokio Iguchi, Hidakamachi; Fumio Haga, Sayama, and Masanobu Ishikawa, Sakado, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,672

Claims priority, application Japan, Aug. 20, 1979, 54-105724

Int. Cl.³ F16H *1/04*

U.S. Cl. 74—422 3 Claims



1. A rack having a substantially cylindrical body, and pinion gearing comprising a helical rack and a spiral pinion, wherein said helical rack meets the following relation:

$$\frac{R_k}{L_k} \leq \sqrt{\frac{1}{1+\left(\frac{\sin\beta}{\tan\alpha_n}\right)^2}}$$

where,

L_k=the radius of said helical rack,

R_k=the distance from the axis to the tooth crest of said helical rack,

β=the helix angle of the gear-teeth of said helical rack, and

α_n=the pressure angle of the gear-teeth of said helical rack.

4,382,390

CAMSHAFT FOR RECIPROCABLE PISTON ENGINES

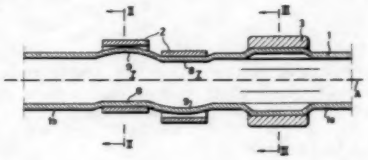
Friedrich Jordan, Kürten, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Division of Ser. No. 82,017, Oct. 5, 1979, Pat. No. 4,293,995, which is a continuation of Ser. No. 898,818, Apr. 21, 1978, abandoned, which is a continuation of Ser. No. 733,071, Oct. 18, 1976, abandoned. This application Apr. 23, 1981, Ser. No. 256,814

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1975, 2546802

Int. Cl.³ F16H *53/00*

U.S. Cl. 74—567 **1 Claim**



1. A camshaft for reciprocable piston engines, the camshaft comprising in combination:

a tubular member having an outer peripheral surface and a wall of constant thickness, said tubular member being formed to rotate about a longitudinal axis and having a round portion with a wall equidistant from the axis;

a plurality of longitudinally extending, uniform undulations formed by the wall of the tubular member, said undulations having an outer surface projecting beyond the round portion; and extending a limited distance in the longitudinal direction;

a bearing friction fitted against the undulations and having an inner surface conforming to the outer surface of the undulations;

longitudinally spaced cam positions on the tubular member, each cam position being formed by radially displacing a portion of the wall of the tubular member generally in one radial direction to form a first arcuate outer surface of the wall of the tubular member, displaced toward the axis of the tubular member, and a second arcuate portion of the wall of the tubular member displaced away from the axis to form a convex bulge curved in three dimensions wherein the cam position has an out-of-round configuration, and

cam members frictionally secured to the tubular member at the cam positions, each cam member comprising a straight tubular section conforming to the shape of the tubular member around a substantial portion thereof and having a lobe coextensive with the bulge but radially displaced from the bulge to define a space between the inner surface of the lobe and outer surface of the bulge whereby the cam members are securely maintained by the out-of-round configuration of the cam positions.

4,382,391

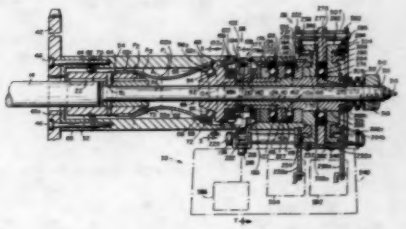
ROTARY SHAFT CONTROL APPARATUS

Bernard Stiff, 1350 Main St., Lynnfield, Mass. 01940

Division of Ser. No. 965,236, Dec. 1, 1978, Pat. No. 4,286,476. This application Jun. 1, 1981, Ser. No. 268,840

Int. Cl.³ F16H *37/04*

U.S. Cl. 74—640 **8 Claims**



1. In a strain wave drive apparatus of the type including a rigid ring gear, a deformable ring gear juxtaposed with the rigid gear and a wave generator engaging the deformable gear and deflecting at least a portion of it into engagement with the rigid gear for use particularly in rotary shaft control apparatus the improvement wherein the deformable gear is formed as an annular noncylindrical body of revolution, one end portion of the body in toothed engagement with the rigid gear being generally conical with a first selected maximum diameter, and tapering to a second diameter less than said first diameter, said second diameter defining a first plane through the gear, the portion of the gear beyond said first plane flaring outwardly with a smooth shape transition to a third diameter greater than the second diameter, said third diameter defining a second plane through the gear where radial and axial gear motions are minimal when the wave generator is rotated relative to the deformable gear.

4,382,392

HYDROMECHANICAL TRANSMISSION WITH POWER BRANCHING

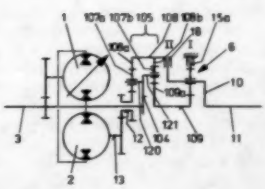
Michael Meyerle, Meckenbeuren-Lochbrücke; Gisbert Lechner, Böblingen, and Anton Ott, Tettnang, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 896,501

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716960

Int. Cl.³ F16H *47/04, 37/06*

U.S. Cl. 74—687 **2 Claims**



1. A hydrostatic-mechanical transmission system of the power-branching type having a "neutral" operating mode, comprising:

an input shaft connectable to a prime mover for driving the hydrostatic-mechanical transmission system;

a hydrostatic transmission including:

a variable displacement pump having a drive shaft,

a hydrostatic motor hydraulically connected to said pump and having a motor shaft, and

means connecting said drive shaft with said input shaft, said hydrostatic transmission having an adjustability from a fully negative value through a zero value to a fully positive value;

a mechanical transmission including:

a pair of input elements,

gearing interconnecting said input elements to provide power summing,

an output element operatively connected to and driven by said gearing with a power representing the sum of input powers at said input elements,

speed-range selector means defining a first low-speed range for said gearing and a second high-speed range for said gearing,

means for continuously and noninterruptedly connecting said input shaft to one of said input elements, and

means for connecting said motor shaft to the other of said input elements;

a transmission output shaft connectable to a load to said output element, said hydrostatic transmission having a negative value in said "neutral" mode of the transmission system; and

means for coupling said transmission such that the transmission ratios of said hydrostatic transmission and said mechanical transmission establish in said neutral mode in each speed range a zero output contribution by mechanical transmission comprising:

two planetary gear sets in succession, each planetary gear set comprising a sun gear, a ring gear and a planet carrier with a planet gear meshing with said sun gear and said ring gear and constituting three members of the respective planetary gear set, two of said members of a first of said planetary gear sets comprising said input elements, the other member of said first planetary gear set being connectable to one of the members of the second of said sets, another of the members of the second set being connected to one of said two members of said first set, said selector means including means for immobilizing a third member of said second set, whereby said output elements is constituted by a nonimmobilizable member of said second set, and a clutch connecting the planet carrier of said second set with the ring gear of said first set, and a brake for immobilizing the ring gear of said second set.

4,382,393

RETROFITTABLE OVERDRIVE ASSEMBLY

Thomas C. Bowen, Westlake Village, Calif., assignor to Trans Auto Specialties, Inc., Cleveland, Ohio

Filed Apr. 21, 1980, Ser. No. 142,618

Int. Cl.³ F16H *47/08*

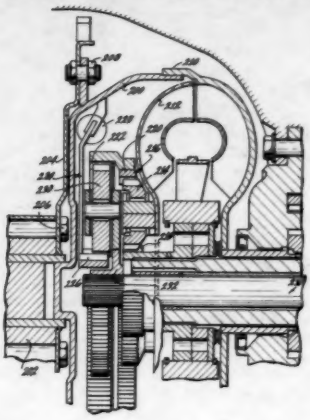
U.S. Cl. 74—688 **8 Claims**

1. A retrofittable overdrive assembly for use in an automobile which includes an engine, a transmission disposed in spaced relationship to the engine, and a torque converter disposed between the engine and the transmission, comprising

a housing adapted to be retrofitted into the existing space between the engine and the transmission normally occupied by the torque converter for coupling to the engine at the speed of the engine;

turbine means disposed within the housing, consisting of an impeller and a turbine, the impeller being operatively coupled to the housing for rotation by the housing, and the turbine being hydraulically coupled to the impeller for rotation with the impeller; and

gear means disposed within the housing for producing an increase in speed by a particular factor relative to the speed of the engine, said gear means including first and second sets of gears, the gears in the first set being driven by said turbine and being coupled to a first gear in the second set to drive said first gear, the gears in the second set including a second gear driven by the housing and including a third gear operatively coupled to the first and



second gears and to the transmission to drive the transmission.

4,382,394

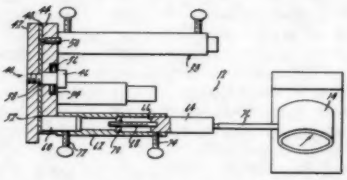
INDEXING TURRET STOP FOR A MACHINE TOOL

Ronald N. Morin, 29219 Roycroft, Livonia, Mich. 48154

Filed Nov. 17, 1980, Ser. No. 207,476

Int. Cl.³ B23B *25/06*; B23Q *17/00*

U.S. Cl. 82—34 D **8 Claims**



1. An indexing turret stop apparatus for a machine tool, comprising:

base means including a turret platform and a predetermined number of indexed positions of rotation; and

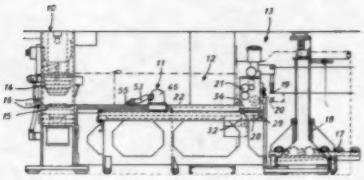
a plurality of stop rod assemblies varying in length and corresponding to the number of said indexed positions of rotation, each having first rod means mounted to said turret platform and extending perpendicularly therefrom for providing a coarse adjustment in the length of said stop rod assembly, a cylindrical sleeve member having a seat portion and slidably disposed on said first rod means generally at a first end of said sleeve member, second rod means generally received in a second end of said sleeve member for providing a fine adjustment in the length of said stop rod assembly, said second rod means including a screw portion threadingly connected to said seat portion of said sleeve member, and first manually adjustable set screw means for restricting the movement of said sleeve member with respect to said first rod means and second manually adjustable set screw means for restricting the movement of said second rod means with respect to said sleeve member.

4,382,395

LOADING DEVICE FOR A MACHINE TOOL, PARTICULARLY FOR MACHINING PANELS OF SHEET METAL OR OTHER MATERIALS

Thomas Haar, Mittelstieg 15, 2083 Halstenbek, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 253,324
Int. Cl.³ B21D *28/04*; B23Q *15/24*
U.S. Cl. 83—71 21 Claims



1. A loading device for a machine tool for machining panels which are singly placed onto a table one after the other with the aid of a supply means, said panels being brought into a predetermined position with the aid of a positioning means and subsequently engaged by gripping means of an automatic feeding means arranged above the machine table and moved into a machining position in the machine tool, the supply means and the feeding means being controlled by an automatic control device, preferably a numerical control, the improvement is characterized in that the positioning device comprises a positioning plane located between the supply means and the feeding means, first and second abutment means being provided at the positioning plane, the positioning device comprising positioning means adapted to be moved along two orthogonal axes by means of a positioning device and adapted to be brought into endgagement with a panel, in order to place it at first into contact with the first abutment means and subsequently with the second abutment means, with first or second abutment means getting into engagement with the rear edge of the panel looking in the direction of feeding, loading means being provided which are adapted to be brought into engagement with the panel in the positioning plane, said loading means being driven by means of a loading drive to reciprocate back and forth in order to bring the panel from the aligned loading position into a predetermined forward position of transfer in front of the gripping means of the feeding device, when the latter are disposed in the starting position, with the loading means passing through underneath the feeding means.

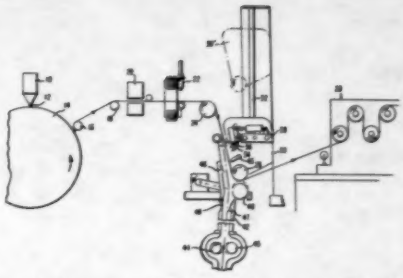
4,382,396

CAST WEB DIVERSION

William E. Hawkins, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1981, Ser. No. 246,013
Int. Cl.³ B26D *1/00*
U.S. Cl. 83—98 9 Claims

4. In a machine including a quench wheel over which a freshly cast web is advanced to a stretching station, a cut-and-divert apparatus comprising: a carriage carrying a roll and a pair of knives; means mounting the carriage for movement to and from a position in which the roll engages the film between the quench wheel and the stretching station; means mounting each knife on the carriage for pivotal movement into and out of the path over which the web advances to said roll and for rotation with respect to that path; actuators for pivoting the knives and rotating them into divergent positions adjacent the



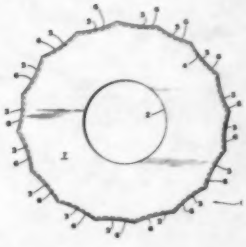
center of said path; and drive means for traversing the knives in opposite directions and through the edges of said path whereby to start a tongue; an air jet for diverting the tongue away from said path; and a waste collector positioned to receive the diverted tongue and web.

4,382,397

SHEAR WHEEL FOR CUTTING FABRIC

Robert P. De Torre, 321 Barclay Ave., Pittsburgh, Pa. 15221

Filed Dec. 11, 1980, Ser. No. 215,274
Int. Cl.³ B26D *1/20*
U.S. Cl. 83—508 14 Claims



1. A rotary shear circular disc having a side, a plurality of projecting segments disposed about the periphery of the disc, each of said segments having a peripheral land and a peripheral groove, the groove being disposed between the land and the side and intersecting the side to form a peripheral cutting edge therewith.

4,382,398

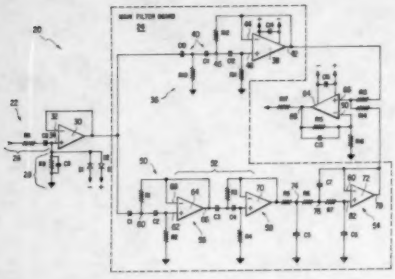
METHOD AND APPARATUS FOR ELIMINATING FEEDBACK IN STAGE MONITORS

R. Michael O'Neill, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed May 29, 1981, Ser. No. 268,648
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 8 Claims

1. Apparatus for modifying the output of a stage monitor comprising an electronic filter circuit electronically connected between an input of said monitor and an output speaker of said monitor, said electronic filter circuit comprising means for attenuating substantially all frequencies below about 50 Hz, substantially all frequencies between about 100 Hz and 700 Hz,

and substantially all frequencies greater than about 3,500 Hz, the amount of attenuation below about 50 Hz increasing greater than about 15 db per octave to greater than minus 15 db, the amount of attenuation between about 100 Hz and 700 Hz increasing about 15 db per octave to greater than minus 15



db at a frequency between 100 Hz and 700 Hz, and the amount of attenuation greater than about 3,500 Hz increasing about 6 db per octave to greater than minus 15 db, said filter circuit passing frequencies between about 50 Hz and 100 Hz and between about 700 Hz and 3,500 Hz.

4,382,399

SUPPORT FOR THE DRIVE SHAFT OF AN AXIAL-PISTON MACHINE OF AN INCLINED AXIS CONSTRUCTION

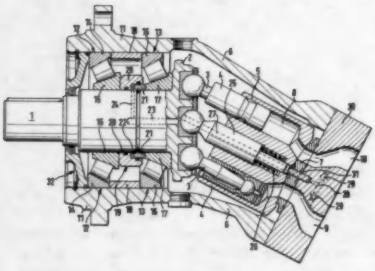
Manfred Lotter, Neu-Ulm, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,473

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947553

Int. Cl.³ F01B *13/04*

U.S. Cl. 91—486 **5 Claims**



1. In a bearing support for the drive shaft of an axial piston machine of an inclined axis construction for pressurized fluids, including at least one piston-sided and one drive-sided axially loadable bearing having stationary outer rings arranged in a bearing housing and of equal load receiving direction towards the piston side, at least the outer ring of one of the bearings being axially supported on the bearing housing and at least one of the inner rings of said bearing being supported on the piston side against the drive shaft; at least one pressure cylinder unit having a balancing piston and subjected to pressurized fluid from the pressure side of the machine for balancing the effective axial components of the piston forces between the bearings; the improvement comprising: said pressure cylinder unit being arranged intermediate the inner rings of said bearings, said balancing piston being located against one of said inner rings and a cylinder portion of said pressure cylinder unit being located against the other inner ring; and a passageway in said drive shaft for supplying the pressure chamber of said pressure cylinder unit with pressurized fluid.

4,382,400

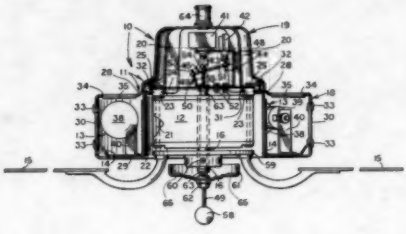
COMBINED CEILING MOUNTED FAN AND LIGHTING FIXTURE

Clarence Stutzman, 1429 Reedsburg North, Wooster, Ohio 44691

Filed Jan. 9, 1981, Ser. No. 223,587

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—40 DL **11 Claims**



1. A combined ceiling mounted fan and lighting fixture having a plurality of fan blades, comprising:

a housing capable of being mounted to the ceiling and including chamber means and compartment means;

motor means for rotating the fan blades, said motor means mounted within said housing and having a rotating shaft in the form of a hollow cylinder;

lighting means for generating illumination mounted within said chamber means of said housing and above said fan blades;

shield means for insuring that substantially all illumination from said lighting means is projected away from the fan blades;

light control means mounted within said compartment means for controlling the operation of said lighting means;

motor control means mounted within said compartment means for controlling the rotational speed of the fan blades; and,

switching control means for selectively actuating said light control means and said motor control means, said switching control means being coaxial with said shaft of said motor means and extending below said housing and the fan blades and including control rod means coupled to said motor control means and passing coaxially through said shaft in said motor means to a point below said housing and the fan blades, rotation of said control rod means operating said motor control means so as to control the rotation speed of the motor and fan blades.

4,382,401

AIR DISTRIBUTION APPARATUS, ESPECIALLY FOR OVERSATURATED AIR

Paul Simmler, Meilen, Switzerland, assignor to Luwa AG, Zü rich, Switzerland

Filed Aug. 13, 1980, Ser. No. 177,639

Claims priority, application Switzerland, Sep. 13, 1979, 8289/79

Int. Cl.³ F24F *13/06*

U.S. Cl. 98—40 C **14 Claims**

14. An air distribution apparatus comprising:

inflow channel means;

outlet elements provided at least at one side of said inflow channel means and distributed over the length of said at least one side of said inflow channel means;

each of said outlet elements having a base portion for receiv-

ing water which has been separated out of air flowing through said inflow channel means;

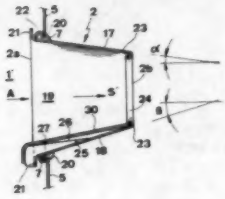
each of said outlet elements having a free flow cross-section;

each of said outflow elements having an outlet opening;

each of said outflow elements being provided with a catch element extending along the circumference of its outlet opening and serving to prevent the efflux of water precipitated at an inner surface of said outflow element;

each of said outflow elements containing a collecting trough formed by said base portion;

said collecting trough descending towards the interior of said inflow channel means;



said collecting trough serving for the withdrawal of water which has been removed at the related outlet element;

each of said outlet elements has inlet opening;

a plurality of ribs arranged at least at the region of the inlet opening of the related outlet element; and

said ribs being arranged so as to protrude from the base portion of the related outlet element and being disposed in spaced relationship from one another and extending essentially in the lengthwise direction of the related outlet element.

4,382,402

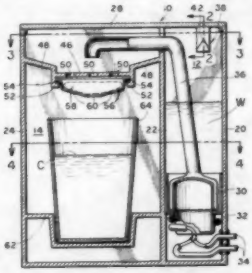
PORTABLE COFFEE MAKER

Donald E. Alvarez, 17256 Akita Ct., Strongsville, Ohio 44136

Continuation-in-part of Ser. No. 250,021, Apr. 1, 1981, abandoned. This application Aug. 12, 1981, Ser. No. 292,231

Int. Cl.³ H47J *31/34*

U.S. Cl. 99—295 **17 Claims**



1. A portable coffee maker adapted to be used with a package of ground coffee and a package of water to provide brewed coffee in a cup comprising, a first chamber defined by walls to receive water to be heated, a second chamber defined by walls for brewing the coffee, first means in said first chamber to pierce the package of water, second means in said first chamber to heat the water and direct the same to said second chamber, first means in said second chamber to hold the package of ground coffee in position to permit the heated water received from said first chamber to pass therethrough, and second means in said second chamber to position the cup below said first means in said second chamber to receive brewed coffee therein.

4,382,403

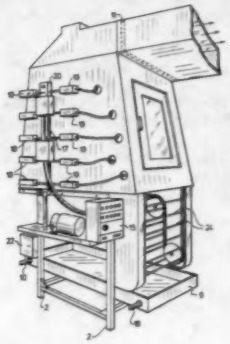
INDUSTRIAL COOKING MACHINES

Josef Tokayer, Willowdale, Canada, assignor to Orbit BBQ Products Ltd., Richmond Hill, Canada

Filed Mar. 2, 1981, Ser. No. 239,667

Int. Cl.³ A47J *37/04*

U.S. Cl. 99—339 **16 Claims**



1. An industrial cooking machine comprising a housing, a preheat region, a cooking region in said housing, an endless conveyor for travelling on a path through both said preheat region and said heating region and a pair of accesses to said conveyor one at either end of said machine between said preheat region and said cooking region along the conveyor path, said conveyor being reversible in direction of travel whereby the arrangement is such that when said conveyor is moved in one direction food loaded thereon through either one of said accesses travels through said preheat in advance of said cooking region and when said conveyor is reversed the food travels directly to said cooking region with the other of the accesses being positioned in said cooking machine to enable unloading of the food prior to passing through the preheat region.

4,382,404

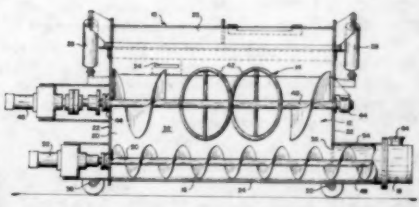
VACUUM SCREW LOADER

Charles C. Hawley, Piedmont, and Benjamin Sieradzki, Berkeley, both of Calif., assignors to Chemetron Process Equipment, Inc., Louisville, Ky.

Filed Jun. 23, 1981, Ser. No. 276,712

Int. Cl.³ A22C *17/00*; B01F *13/06*

U.S. Cl. 99—472 **7 Claims**



1. A vacuum screw loader for sequentially deaerating and pressure packing meat emulsion and similar food products, said loader including:

a sealable hollow hopper defining a vacuum chamber adapted to receive a volume of said emulsion;

an inlet in said hopper adapted to permit the introduction of said emulsion into said chamber;

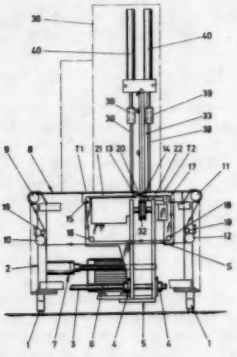
an outlet in said hopper below and remote from said ..alet for removal of said emulsion from said chamber;
an elongate agitator rotatably mounted on said hopper within said chamber below said inlet;
a positive displacement pump coupled with said outlet to receive emulsions passing therethrough;
means coupled with said hopper to create reduced pressure in said chamber for removal of entrained air in said emulsions released by the operation of said agitator; and
a mechanical auger within the chamber operatively mounted on the hopper adjacent said outlet for force feeding said emulsion to said pump through the outlet.

4,382,405

MACHINE FOR BINDING PACKAGES

Hans H. Büttner, 4020 Mettmann, Obmettmann 13, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,599
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949519
Int. Cl.³ B65B *13/12*
U.S. Cl. 100—7 **10 Claims**



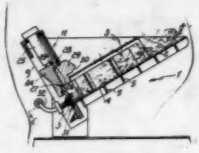
1. In a machine for tying packages having a conveyor belt, tying means, a guide device for the tying means, and a press, the guide device placing the tying means on a prescribed path around the package which is supported below the press on the conveyor belt, the press effecting a pressing operation on the package, the machine also having a fastening device which connects the ends of the tying means, the improvement comprising
a carriage, said press being mounted on said carriage,
means for synchronously moving said carriage along with said conveyor belt, the latter being moved even during the pressing operation,
said carriage has guide rollers constituting means for forming courses of the conveyor belt, such that said courses leave a tying slot free between each other and are connected with each other by a loop of the conveyor belt which lies witin said carriage,
a machine frame,
said carriage is moveable relative to said machine frame,
means comprising a package table for supporting package support sections of the courses of said conveyor belt,
said package table comprises two sets of overlapping bars, said bars of each of said sets are arranged spaced from each other,
one of said sets of bars extends from said carriage, and
said other set of bars extends from said machine frame.

4,382,406

MACHINE FOR COMPRESSING AND CUTTING RANDOM LOADED SCRAP METAL

Luciano Vezzani, Corso Italia 43, Ovada (Prov. of Alessandria), Italy

Division of Ser. No. 28,153, Apr. 9, 1979, Pat. No. 4,253,388.
This application Dec. 3, 1980, Ser. No. 212,650
Claims priority, application Italy, Apr. 12, 1978, 22234 A/78
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—98 R **5 Claims**



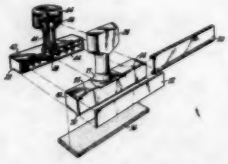
1. A machine for compressing and cutting random scrap metal, comprising a scrap metal feeding trough, a guillotine cutting station arranged at an exit end of said trough and having cutting means for cutting the scrap metal in a direction substantially perpendicular to the metal feeding direction, a first compression means arranged upstream of, and near to, said guillotine cutting station for compressing the scrap metal in a direction substantially transverse to the feeding direction and substantially perpendicular to the cutting direction, a second compression means arranged upstream of, and near to, said guillotine cutting station for compressing the scrap metal in a direction substantially perpendicular to the direction of said first compression, said second compression means being operated simultaneously with said cutting means to compress a portion of scrap metal and simultaneously cut a previously compressed scrap metal portion advanced beyond said guillotine cutting station, wherein said trough has a bottom forming an inclination angle such as to provide free gravity advancing of the scrap metal toward said guillotine cutting station, and wherein upstream of, and near to, said first compression means there are provided means for gradually compressing the scrap metal in the direction of compression of said first compression means such as to gradually gather the scrap metal toward the region of said first and second compression means.

4,382,407

PLASTIC MOUNT FOR A STAMPING DIE

Edwin W. Goldstein, Scarsdale, N.Y., assignor to Crown Marking Equipment Co., Philadelphia, Pa.

Filed Apr. 23, 1981, Ser. No. 256,736
Int. Cl.³ B41K *1/56*
U.S. Cl. 101—405 **7 Claims**



1. A hollow plastic mount for a stamping die, said mount being defined by an elongated tubular base of rectangular cross section having closed ends, opposed top and bottom surfaces and opposed front and rear surfaces, said mount further including a generally tubular handle projecting upwardly from the center of said top surface of said base, the bottom surface of said base including a pair of longitudinally extending parallel lower ribs projecting downwardly from said bottom surface contiguous with the front and rear surfaces of said base respectively and defining a boundary for the placement of a stamping die, said mount formed from unitary front and rear segments

defined by a central vertical plane extending parallel to the longitudinal axis of said base, said front and rear segments being connected together, with said front segment further including a means, cooperating with the lower rib formed on said front segment, adapted to receive a longitudinally extending C-shaped, transparent strip along the front surface of said base, such that a card bearing incicia identifying said stamping die may be readily displayed by interposing said card between said strip and the front surface of said base, said means including a pair of longitudinally extending rib portions projecting upwardly from the upper surface of said base contiguous with the front surface thereof, said rib portions being spaced apart such that a separation is defined therebetween, said separation being aligned with said handle and being at least as large as the longitudinal width of said handle at its juncture with said base, said rib portions cooperating with the lower rib formed on said front segment to receive and hold said transparent strip.

4,382,408

CIRCUIT ARRANGEMENT FOR AN IMPACT FUZE

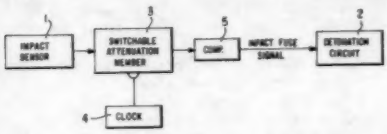
Hans Baumer, Senden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,697

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011230

Int. Cl.³ F42C *11/02*

U.S. Cl. 102—216 **9 Claims**



1. In an impact fuze for barrel weapon ammunition of the type whose velocity of flight continuously decreases from the time of firing with increasing duration of flight, said impact fuze including impact sensor means for producing an electrical output signal upon impact and a detonation signal channel connecting the output of said impact sensor means to a detonation circuit; a circuit arrangement for avoiding the actuation of a detonation when said impact sensor means impinges on a rain drop comprising circuit means connected to said impact sensor means for increasing the detonation response sensitivity of the entire said impact fuze furing flight of said fuze.

4,382,409

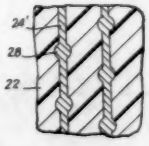
LONGITUDINAL REINFORCEMENT OF HIGH EXPLOSIVE FILL IN PROJECTILES

Bruce P. Burns, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1980, Ser. No. 202,221

Int. Cl.³ C06D *5/00*

U.S. Cl. 102—289 **3 Claims**



1. A high explosive grain for an artillery projectile of the type having a casing comprising:

a solid mass of high explosive in said casing;

a plurality of longitudinal reinforcement members in said mass of high explosive;

means for transferring at least part of stresses in said mass of high explosive to said longitudinal reinforcement members; and

means for transferring at least part of stresses in said longitudinal reinforcement members to said casing whereby a tendency for premature explosion of the explosive grain due to high acceleration is reduced; wherein said plurality of longitudinal reinforcement members includes a plurality of straight rods forming a matrix parallel to an axis of application of said high acceleration; and said means for transferring includes protuberances rigidly affixed to said longitudinal reinforcement members.

4,382,410

EXPLOSIVE BLASTING METHOD AND MEANS

David S. Bowling, Rte. 7, Box 145, Joplin, Mo. 64801, and Roy N. Moore, 14811 Kimberly, Houston, Tex. 77079

Filed Dec. 22, 1980, Ser. No. 218,489

Int. Cl.³ F42B *1/02*

U.S. Cl. 102—310 **12 Claims**

1. A method of fragmenting structure surrounding a borehole comprising the steps of:

placing a plurality of elongated explosive segments in end-to-end relationship within the borehole in which the diameter of the borehole is at least 2.5 times the diameter of the explosive segments;

supporting the explosive segments centrally of the borehole, the annular area between the explosive segments and borehole being filled with a gas;

placing at least one detonation in intimate contact with each said explosive segment;

connecting a short lead wire to each said detonator;

electrically connecting said lead wires in a parallel circuit; and

substantially simultaneously detonating said detonators by a single electrical impulse.

4,382,411

SELF ALIGNING EXPANSIBLE SABOT PROJECTILE FOR WORN GUN TUBES

Leonard R. Ambrosini, Bettendorf, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

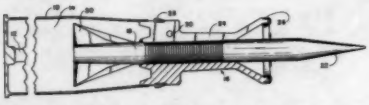
Filed Feb. 2, 1981, Ser. No. 230,185

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—523 **3 Claims**

1. A self-aligning expansible sabot projectile for use with a worn gun tube, said sabot projectile comprising:

An elongated body having front and rear ends, a plurality of sabot segments around said body to axially align said body within said gun tube, said segments bieng held together with a front bourrelet and an obturator circumferentailly placed therearound, said sabot segments having abutting surfaces forming planes extending radially from said body outwardly, said planes extending longitudinally the length of said segments, and pins interconnecting said segments,



said pins passing through said planes in a direction normal thereto, said pins having a longitudinal axis transversse to the axis of said elongated body said pins being located in cavities formed in said sabot segments, wherein said pins axially and radially align said segments while being projected through said gun tube, said segments thereafter separating from said body in flight, without any binding of the segments.

4,382,412

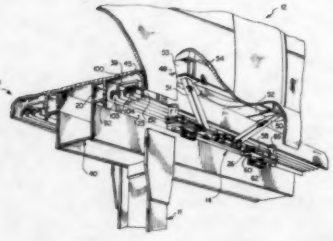
DUAL DRIVE TRACTION SYSTEM

Donald P. Sullivan, Burnsville, Minn., assignor to Universal Mobility, Inc., Salt Lake City, Utah

Filed Jun. 30, 1980, Ser. No. 164,428

Int. Cl.³ B61B *5/02*; B61C *3/00, 13/04*; F01B *5/02*

U.S. Cl. 104—124 **16 Claims**



1. A dual drive system for an automated guideway transit (AGT) vehicle that is adapted to travel along a guideway assembly, the guideway assembly having a drive wheel running surface and a guide wheel running surface independent of said drive wheel running surface, the dual drive system comprising:

a main drive system having a plurality of drive wheels;

means for driving said drive wheels; and

an auxiliary drive traction system having a plurality of independently operated guide wheel assemblies, each of said guide wheel assemblies comprising:

a guide wheel;

means for selectively, adjustably biasing the guide wheel to increase the traction of the guide wheel against the guide wheel running surface;

means for simultaneously driving each said guide wheel independently of said drive wheels; and

clutch means for selectively engaging and disengaging said guide wheel from said means for driving said guide wheel in each direction of the movement of the (AGT) vehicle.

4,382,413

EARTHQUAKE RESISTANT CRANE

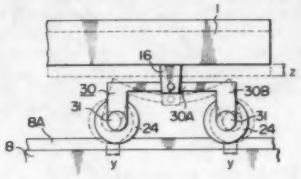
Yutaka Kakehi; Katsuyuki Terada; Kenjiro Kasai; Kelichiro Torii, and Toru Saito, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,847

Claims priority, application Japan, Feb. 20, 1979, 54-17841

Int. Cl.³ B61F *5/30*; B61D *15/00*

U.S. Cl. 105—163 R **5 Claims**



1. A crane comprising:

girders;

rail means for supporting the girders;

a travelling device for moving said girders along the rail means including a plurality of wheels for supporting the girders on the rail means;

means for mounting each of said wheels on the girders so as to enable the wheels to be horizontally displaceable with respect to the girders, said mounting means including vibration direction converting means for resiliently supporting said girders and for converting vertical vibrations to a horizontal displacement of the wheels, said vibration directing converting means comprises a pair of portal trucks, each of said portal trucks including a horizontal portion capable of undergoing resilient deformation in a vertical direction and being pivotally connected at a central portion of said horizontal portion to one of a pair of saddles secured to an undersurface of each of said girders, each portal truck including a pair of vertical portions each having mounted at a lower end thereof a bearing box containing a bearing supporting an axle for said wheels, and

drive control means for driving said travelling device for movement and for interrupting the movement thereof.

4,382,414

STEEL PALLET CONSTRUCTION

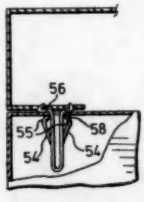
Ferdinand M. Svirklys, 54 Carnforth Rd., Toronto, Ontario, Canada (M4A 2L2)

Filed Apr. 24, 1979, Ser. No. 32,743

Claims priority, application United Kingdom, Apr. 25, 1978, 16286/78; Jun. 20, 1978, 27426/78; Fed. Rep. of Germany, Apr. 17, 1979, 2915460

Int. Cl.² B65D *19/28*

U.S. Cl. 108—56.1 **22 Claims**



1. A pallet construction, comprising:

at least two spaced-apart substantially parallel longitudinally-extending members,

a plurality of deck-forming members contacting and extending at least between the at least two longitudinally-extending members generally transverse thereto in spaced-apart relation,

each of said plurality of deck-forming members having at least one planar portion cooperating with the at least one planar portion of others of said plurality of deck-forming members to provide a planar pallet deck surface which extends substantially the length of said longitudinally-extending members, and

interconnecting means interconnecting said at least two-longitudinally-extending members with each of said plurality of deck-forming members at the intersections thereof and preventing movement of each of said plurality of deck-forming members longitudinally thereof and transverse to said at least two longitudinally-extending members,

at each said intersection, said interconnecting means including clip-receiving slot means formed in said longitudinally-extending member and a one-piece spring metal clip mounted to said deck-forming member and extending into said slot means in relative movement-inhibiting relationship therewith, said clip comprising:

a generally U-shaped body taken in cross-section at either end thereof, said body being of a length generally equal to the length of said slot means,

said body being defined by a pair of side walls joined by a bight portion at one end thereof and each having an outwardly-extending flange which is turned inwardly at the free end thereof to define a pair of inwardly-facing jaw members extending from the other ends thereof,

said jaw members being separated by a distance less than the width of a mounting strip provided on said deck-forming member in a non-resiliently-deformed position of the clip,

said body member including a cantilevered ramp member formed from each of the side walls and spaced inwardly from the ends of the side walls, said ramp members including a first portion extending outwardly from said bight portion to a shoulder and a second portion extending inwardly from said shoulder towards said flanges,

when said jaws are separated by a distance equal to the width of said strip, the distance between said sidewalls being less than the width of the slot and the distance between said shoulders being greater than the width of said slot.

4,382,415

FLUIDIZED BED REACTOR UTILIZING A BOTTOMLESS PLATE GRID AND METHOD OF OPERATING THE REACTOR

Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Filed Dec. 5, 1980, Ser. No. 213,349
Int. Cl.³ F23G 5/00; F23D 19/00
U.S. Cl. 110—245 **5 Claims**

1. A fluidized bed reactor utilizing a bed of granular material for combusting non-uniform particulate matter, the combustion process resulting in refuse including tramp material and/or agglomerated material, comprising:

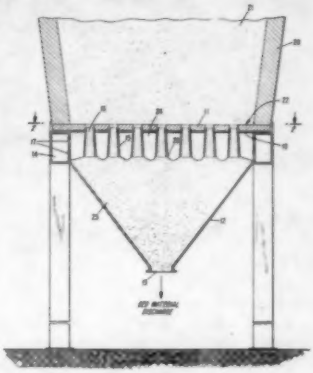
peripheral walls forming a reactor bed;

a plate grid having a support surface with an upper face and a lower face;

air distribution means extending through the support surface for delivering pressurized air to the reactor bed;

conduit means extending through the support surface for removing tramp material and/or agglomerated material from the reactor bed, said conduit means including downwardly diverging walls extending from the lower face of the support surface;

chamber means located below said support surface and having an upper end and a lower end, the lower end of said chamber means functioning to collect refuse and/or granular material passing through said conduit means wherein the top surface of said collected refuse is in contact with the lower end of the downwardly diverging walls of said conduit means, and the upper end of said chamber means, which is formed by the lower face of said support surface and the top surface of said collected refuse, functioning as the sole source of pressurized air to said distribution means; and



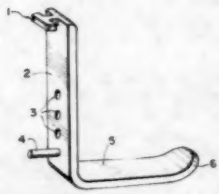
a plunum surrounding, and in fluid communication with, the upper end of said chamber means for supplying pressurized air to the upper end of said chamber means from a point at or above the lower end of said downwardly diverging walls.

4,382,416

DETACHABLE NESTABLE MAST STEPS

Ogden Kellogg-Smith, 226 Haverton Rd., Arnold, Md. 21012

Filed Feb. 17, 1981, Ser. No. 235,115
Int. Cl.³ A47F 5/00
U.S. Cl. 114—90 **8 Claims**



1. A step comprising:

(a) a substantially vertical leg,

(b) a substantially horizontal leg connected to said substantially vertical leg,

(c) a generally T-shaped protrusion and a pin spaced therefrom extending from said substantially vertical leg in a direction opposite to the direction of said substantially horizontal leg, and

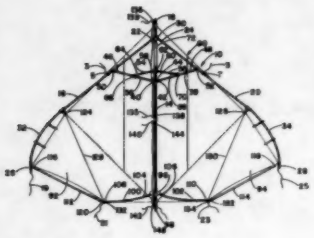
(d) at least one hole in said substantially vertical leg positioned between said protrusion and said pin, whereby mast steps may be nested with pins of adjacent nested steps extending through a hole of at least its next adjacent step.

4,382,417

GLIDER SAIL ASSEMBLY

Harri Talve, 8271 Heather St., Richmond, British Columbia, Canada (V6Y 2R3)

Filed Jan. 22, 1981, Ser. No. 227,172
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—102 **14 Claims**



1. A glider sail assembly comprising:

a center boom with a fore end for directing into a wind;

means for mounting the center boom generally horizontally at the top of a mast and directed at an upward angle towards the fore end;

two side booms, each of the side booms having a fore end hingedly connected to the center boom near the fore end of the center boom and flexible portions near an aft end of said each side boom, the side booms being extendible to diverge away from each other in a V-shaped arrangement;

a pair of struts for holding the side booms outwardly away from the center boom in the V-shaped arrangement, each said strut having a first end connectable to the center boom and a second end connectable to one of the side booms;

a generally triangular sail securable to the booms, so the sail extends between the side booms, and having skirt portions at each side thereof adjacent the flexible portions of the side booms, the skirt portions extending downwardly when the flexible portions of the side booms are deflected downwardly, so one of the skirt portions provides a propulsive force when the center boom is directed into the wind; and

first and second slide members slidably received for axial movement along the center boom, the fore ends of the side booms being hingedly connected to the first slide member, the first ends of the struts being hingedly connected to the second slide member and the second ends of the struts being hingedly connected to the side booms.

5. A glider sail assembly comprising:

a center boom with a fore end for directing into a wind;

means for mounting the center boom generally horizontally at the top of a mast and directed at an upward angle towards the fore end, the means for mounting comprising an outer shell hingedly connectable to the top of the mast and extending about the center boom and a resilient member comprising a tubular insert between the outer shell and the center boom, the resilient member allowing lateral tilting of the sail about the center boom;

two side booms, each of the side booms having a fore end connected to the center boom near the fore end of the center boom and flexible portions near an aft end of each side boom, the side booms being extendible to diverge away from each other in a V-shaped arrangement; and

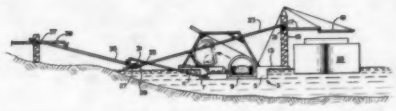
a generally triangular sail securable to the booms, so the sail extends between the side booms, and having skirt portions at each side thereof adjacent the flexible portions of the side booms, the skirt portions extending downwardly when the flexible portions of the side booms are deflected downwardly, so one of the skirt portions provides a propulsive force when the center boom is directed into the wind.

4,382,418

BARGE UNLOADING TERMINAL

Louis F. Ray, P.O. Box 80730, Baton Rouge, La. 70808

Filed Jun. 29, 1981, Ser. No. 278,039
Int. Cl.³ B63B *35/72*
U.S. Cl. 114—263 **14 Claims**



1. A barge unloading terminal comprising:

a float assembly in a body of water;

a trough in said float assembly submerged in the water;

a ramp extending from said trough;

a carrier positioned within said trough;

a barge in the carrier;

a plurality of hoppers in said float assembly; and

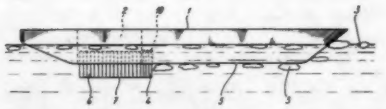
means for moving said carrier and barge along said ramp to a point where the contents of the barge are discharged into said hoppers.

4,382,419

FLOATING VESSEL WITH MOON WELL AND ICE GUARD THEREFOR

Nicolaas J. van Drimmelen, and Rudolf H. Loevendie, both of Alblasserdam, Netherlands, assignors to IHC Holland N.V., Papendrecht, Netherlands

Filed Nov. 13, 1980, Ser. No. 206,462
Int. Cl.³ B63B *35/02*
U.S. Cl. 114—313 **3 Claims**



1. In a floating vessel having a hull and an opening through the bottom of the hull, the opening through the bottom of the hull being bounded by upright side walls of the hull; the improvement comprising an openwork fence structure for the purpose of preventing ice from entering said opening, said fence structure disposed in said opening and guided by the side walls of the opening for vertical movement between a raised position in which the fence structure does not extend below the bottom of the hull and a lowered position in which the fence structure extends both above and below the bottom of the hull, said fence structure being comprised by vertical rods, the fence structure having a plurality of sides as seen from above, there being a plurality of said vertical rods intermediate the ends of each side of the fence structure, said vertical rods forming a pair of vertical side walls that extend lengthwise of the vessel, the space between these side walls being open and unimpeded as seen from above, so as to allow further structure to be independently raised and lowered through the unimpeded space.

4,382,420

DEVELOPMENT APPARATUS

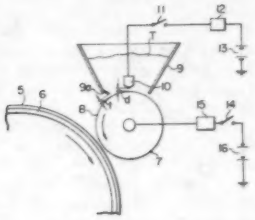
Teruyuki Ohnuma, Yokohama; Seiichi Miyakawa, Nagareyama; Nobuo Mochizuki, Matsudo; Hajime Oyama, Tokyo, and Yukio Tabata, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 921,972, Jul. 5, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,165

Claims priority, application Japan, Jul. 7, 1977, 52/81228; Aug. 19, 1977, 52/99209

Int. Cl.³ G03G *15/09, 15/06*

U.S. Cl. 118—651 25 Claims



1. A development apparatus for developing a latent electrostatic image formed on a photoconductor, comprising:

container means for holding a one-component type developer and having an outlet for discharging said developer therefrom, said developer having a volume resistivity of no less than about 10^9 ohm-cm;

developer supplying means, having an endless conductive surface of a material having a volume resistivity no greater than about 10^8 ohm-cm, for supplying said developer discharged from said container means to said photoconductor;

means including a conductive element located at said outlet and held in contact with said developer for forming a toner layer with a predetermined thickness on said endless conductive surface when said developer is supplied from said container means to said photoconductor by said developer supplying means; and

power source means connected to said conductive element for providing a voltage of a predetermined polarity thereto for charging said developer to a predetermined polarity.

4,382,421

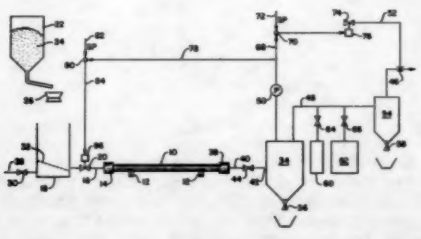
TUBE COATING APPARATUS

David A. Warren, Cypress, and Edwin D. McCrory, Jr., Houston, both of Tex., assignors to Vetco, Inc., Ventura, Calif.

Division of Ser. No. 139,380, Apr. 11, 1980. This application Nov. 23, 1981, Ser. No. 324,191

Int. Cl.³ B05C *7/02*

U.S. Cl. 118—663 11 Claims



1. An apparatus for lining a heated tube comprising: means for supporting and rotating the tube to be lined; a container for holding fusible particles which are to be delivered to said tube; a feedpipe connected to said container and sealably connectable to one end of the tube to be coated; an imperforate tank having a volume greater than the tube to be coated, and having an inlet connection and an outlet connection; a discharge pipe connectable to the second end of the tube to be lined and connected to the inlet connection of said tank; a quick-opening valve located in said feedpipe; a vacuum pump connected to the outlet connection of said tank; sensing means for sensing the level of vacuum within the heated tube; and means for quickly opening said quick-opening valve in response to said sensing means when the measured vacuum level reaches a predetermined vacuum level.

4,382,422

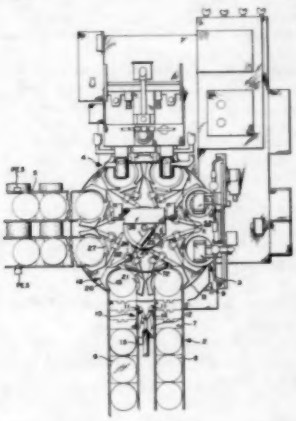
CONTAINER PROCESSING APPARATUS AND METHOD

William R. Eddy, Kansas City; Ronald R. Oliver, Blue Springs, and Jerry W. Young, Weston, all of Mo., assignors to Sealright Co., Inc., Kansas City, Mo.

Filed Jul. 13, 1978, Ser. No. 924,323

Int. Cl.³ B05C *5/02, 7/02*

U.S. Cl. 118—669 23 Claims



1. An apparatus for applying sealant to a container seam including:

conveying means operable for moving a container to and away from a first sealing station, said apparatus further comprising container orienting means including first drive means for rotating the thus conveyed container generally about a longitudinal axis thereof, first detecting means positioned adjacent said first drive means operable for detecting the rotational position of a thus-rotated container, and said first drive means being further operable for selectively rotating said container to a predetermined rotational position; and

first sealant dispensing means positioned adjacent said conveying means at the first sealing station and being operable for dispensing sealant onto a preselected area consisting essentially of a side seam of a thus selectively rotated container, said first sealant dispensing means cooperating with means for providing relative movement between a portion of the first sealant dispensing means and the container.

4,382,423

METHOD AND APPARATUS FOR REARING AQUATIC ANIMALS

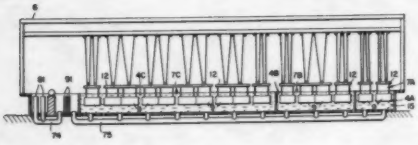
Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 952,664, Oct. 19, 1978, Pat. No. 4,285,298. This application Jul. 13, 1979, Ser. No. 57,322

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **41 Claims**



1. In a system for rearing aquatic animals, a substrate unit comprising:

a plurality of vertical substrate panels, each including upper and lower rigid horizontal members,

a mesh screen attached to said horizontal members and having a plurality of accordion-like folds, and

reinforcing members secured to the face of said screen for maintaining its rigid folded shape; and

means for supporting said plurality of substrate panels in a horizontally stacked position.

4,382,424

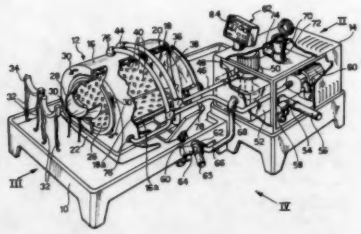
AUTOMATIC APPARATUS FOR CLEANING DOGS AND SIMILAR ANIMALS

Mario Altissimo, Turin, Italy, assignor to Hogar S.r.l., Turin, Italy

Filed Nov. 27, 1981, Ser. No. 325,477

Int. Cl.³ A01K *13/00*

U.S. Cl. 119—158 **9 Claims**



1. Automatic apparatus for washing dogs and similar animals, comprising:

a substantially cylindrical casing disposed with its axis horizontal and provided with a flat, bottom wall, a portion which can be opened to allow an animal to enter and to leave the casing, and a vertical end wall formed with an aperture for the head of an animal positioned, in use, inside the casing, said aperture being provided around its edge with means for firmly encompassing the neck of the animal; the casing being provided internally with a plurality of spray nozzles directed towards the interior of said casing;

supply means for supplying water, or a mixture of water and detergent, under pressure to said spray nozzles;

discharge means for discharging to the exterior of the casing the water or the mixture of water and detergent coming from the spray nozzles;

a central programming and control unit for controlling said supply means and said discharge means in accordance with predetermined operational washing cycle;

supply means for supplying hot air under pressure to said spray nozzles, said air supply means being controlled by said central programming and control unit to effect a drying cycle at the end of the washing cycle;

wherein said casing has an external wall and an internal wall which together define a peripheral interspace with spray nozzles being arranged on the internal wall in communication with said interspace, said external wall being provided with at least one first input connection and with at least one output aperture communicating with said interspace and respectively connected to said water supply means and to said discharge means and with at least one second input connection communicating with said interspace and connected to said air supply means; and

wherein the spray nozzles comprise impressions in the form of circular indentations made in the surface of the internal wall of the casing by pressing with each impression having an elongate diametral slit forming the outlet opening of the spray nozzle.

4,382,425

HEAT EXCHANGER

Michael Boyes, Derby, England, assignor to Stelrad Group Limited, Oxfordshire, England

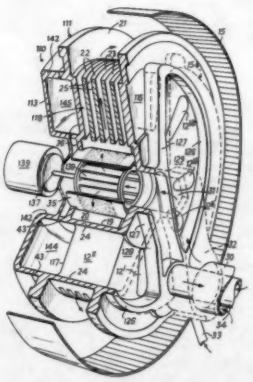
PCT No. PCT/GB79/00041, § 371 Date Nov. 8, 1979, § 102(e) Date Nov. 7, 1979, PCT Pub. No. WO79/00726, PCT Pub. Date Oct. 4, 1979

PCT Filed Mar. 6, 1979, Ser. No. 266,020

Claims priority, application United Kingdom, Mar. 8, 1978, 9132/78

Int. Cl.³ F22B *23/06, 37/10*

U.S. Cl. 122—367 R **1 Claim**



1. A boiler for producing hot water, said boiler comprising a heat exchanger, for indirect heat exchange between hot gaseous combustion products, the heat exchanger having a generally-cylindrical hollow body including a heat exchange matrix **(118)** and comprising at least one generally-cylindrical body member having a central bore **(19)** defining a combustion chamber **(20)**, and a plurality of radial surfaces **(25)** defining

annular gas passages (23) for flow of the combustion products therethrough, said annular gas passages being narrow in relation to their radial extent and leading radially from the central bore towards combustion product outlet means in the form of an annular circumferential space (21) encircling the heat exchange matrix, some of said radial surfaces being the sides of at least one radial wall (22, 250, 251) separating one said annular gas passage from the next, the said radial surfaces and annular gas passages being intersected by transverse walls enclosing longitudinal water passages (12); a burner (35) associated with the combustion chamber for producing said combustion products; water inlet means and water outlet means communicating with the said longitudinal water passages (12); air inlet means to the combustion chamber; and a fan (138) for creating a forced draught in said air and combustion product, characterised in that said at least one radial wall (250,251) of the heat exchanger matrix is hollow by virtue of an internal water bypass passage (252) extending circumferentially therein, said annular water bypass passage being in communication with the longitudinal water passages (12) but not with the annular gas passages (23), so that water not only passes longitudinally along the longitudinal water passages, but also circumferentially through the bypass passage so as to circulate in the hollow wall or walls, a cylindrical burner (35) within the combustion chamber (20), and said burner being arranged coaxially around said fan (138).

4,382,426

COOLING SYSTEM IN A LIQUID COOLED INTERNAL COMBUSTION ENGINE

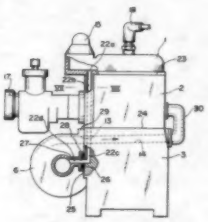
Tetsuzo Fujikawa, Kobe; Ryoji Uda, Kakogawa, and Hitoshi Yamamoto, Hyogo, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 21, 1980, Ser. No. 199,400

Claims priority, application Japan, Oct. 22, 1979, 54-146697[U]

Int. Cl.³ F01P 7/16

U.S. Cl. 123—41.1 **1 Claim**



1. A cooling system for an internal combustion engine comprising

an engine section including a cylinder head, a cylinder case and a crank case to contain a plurality of reciprocating pistons and a liquid passage for cooling the engine section by liquid flowing in the passage, said pistons being substantially vertically disposed in said engine section parallel to each other,

pump means situated outside said crank case between two adjacent pistons, said pump means forcibly transmitting liquid into said liquid passage in said engine section to cool said engine section,

thermostat means connected to said cylinder head above said pump means between the two adjacent pistons, said thermostat means being connected to said liquid passage in said engine section so that the liquid pumped by said pump means flows out through said thermostat means,

a radiator connected between said thermostat means and said pump means to cool the liquid from the engine section and to supply the cooled liquid again to the engine section by means of said pump means, and

a by-pass canal integrally formed entirely inside said engine section between said two adjacent pistons to vertically extend said engine section through said cylinder head, said cylinder case and said crank case for internally connecting said pump means and said thermostat means so that when the liquid passing through said liquid passage in the said engine section is cool, the liquid is transmitted to the pump means through said by-pass canal without passing through the radiator.

4,382,427

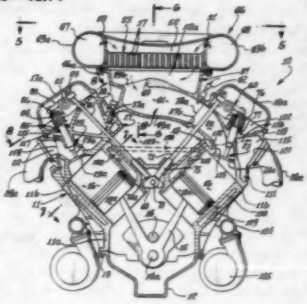
RECIPROCATING ENGINE COOLING SYSTEM

Francis R. Lyndhurst, Costa Mesa, Calif., assignor to Aero Power Engine Manufacturing, Inc., Incline Village, Nev.

Filed Oct. 2, 1981, Ser. No. 307,744

Int. Cl.³ F01P 3/02

U.S. Cl. 123—41.74 **9 Claims**



1. In an internal combustion engine having air/fuel intake manifolding and porting proximate the head of the engine, and exhaust manifolding and porting proximate the head of the engine, the improvement comprising

(a) a cylinder block having two longitudinal rows of cylinders with V-shaped configuration,

(b) the block forming coolant passages proximate the cylinders of each row, there being three coolant inlets at the outer side of each of said cylinder rows to flow coolant to said passages at said one side of each of said rows and also to flow coolant around opposite ends of each row to the passages at the other side of said row, two of the inlets located proximate opposite ends of the associated row to flow unheated coolant around opposite ends of the cylinder row and to the passages at the innerside of the row, and the third inlet located generally mid-way between said opposite ends of the associated row to flow unheated coolant to the passages at the outer side of the row,

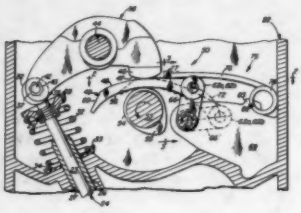
(c) and a cylinder head for each of said rows of cylinders, each head having first and second coolant passages respectively in communication with said passages in the block at said one and said other side of each said row of cylinders to receive coolant flow therefrom, said second passages in the head extending proximate the air/fuel intake porting, said first passages in the head extending proximate the exhaust porting, said intake manifolding everywhere isolated from said first passages in the head,

(d) said first and second passages merging in an upward direction and beyond said intake porting, whereby the coolant in said first and second passages merges for removal from the head.

4,382,428
CONTOURED FINGER FOLLOWER VARIABLE VALVE TIMING MECHANISM

Edward M. Tourtelot, Jr., 2719 Sheridan Rd., Evanston, Ill. 60201

Filed Jun. 8, 1981, Ser. No. 271,680
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.16 13 Claims

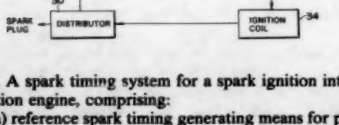


1. Mechanism for varying the time at which a valve for controlling the flow of fluid into or out of a combustion chamber of an internal combustion engine opens and closes, said combustion chamber being defined by a cylinder in the engine and a piston movable in the cylinder for varying the volume thereof, said engine also including a rotatable crankshaft and a rotatable camshaft driven in timed relation with the speed of said crankshaft and linkage means for transmitting reciprocating movement to said valve, and said mechanism comprising a cam member on said camshaft and contoured to provide a predetermined timing for said valve such as will provide optimum performance and efficiency of said engine throughout one operating speed range, follower means engageable with said cam member and said linkage means for varying said predetermined timing of said valve, said follower means having a control surface engaging said cam member and another surface adapted to engage said linkage means, said control and other surfaces each including first and second contiguous, curved portions, and operating means connected to said follower means for shifting the latter throughout a range of positions such as to vary said predetermined timing while said control surface is engaged with said cam member and said other surface is engaged with said linkage means.

4,382,429
SPARK TIMING SYSTEM FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

Toshio Enoshima, Fujisawa; Shoji Furuhashi, and Hideyuki Tamura, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 23, 1981, Ser. No. 227,639
Claims priority, application Japan, Jan. 31, 1980, 55-9377
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425 37 Claims



1. A spark timing system for a spark ignition internal combustion engine, comprising:

(a) reference spark timing generating means for producing a basic spark timing signal;

(b) knocking detecting means for sensing knocking occurring in said engine to generate a knocking signal representing the occurrence of the knocking;

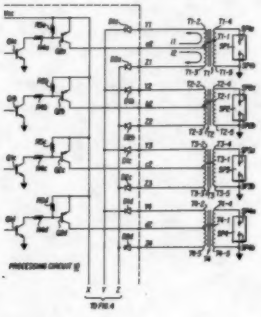
(c) spark timing adjusting means responsive to the knocking signal for adjusting the basic spark timing signal in the direction of retarding spark timing by an amount determined by a first rate of change in the presence of the knocking signal and for adjusting the basic spark timing signal in the direction of advancing spark timing by an amount determined by a second rate of change in the absence of the knocking; and

(d) rate-changing means responsive to one of engine load and engine speed for increasing the second rate of change when said one of engine load and engine speed decreases below a first predetermined level.

4,382,430
IGNITION SYSTEM

Shinichiro Iwasaki, 1942 Coolidge St., Troy, Mich. 48084

Filed Jun. 1, 1981, Ser. No. 268,889
Int. Cl.³ F02P 1/00
U.S. Cl. 123—606 5 Claims



1. An ignition system for an internal combustion engine, comprising:

crankshaft position sensor means coupled to a crankshaft of said engine for periodically supplying a first voltage to an output of said sensor means in synchronism with the rotation of said crankshaft;

oscillator means for producing an AC output signal;

electronic switch means coupled to receive said AC output signal from said oscillator means for alternatingly supplying a second voltage to first and second outputs of said switch means in synchronism with said AC output signal;

an ignition transformer having a primary winding including a center tap and a secondary winding, said center tap of said primary winding being coupled to receive said first voltage from said output of said sensor means, a first terminal of said primary winding being coupled to receive said second voltage from said first output of said switch means, a second terminal of said primary winding being coupled to receive said second voltage from said second output of said switch means, said transformer inducing a high voltage into said secondary winding when said first and second voltages are simultaneously applied to said primary winding; and

spark plug means coupled to receive said high voltage induced into said secondary winding of said transformer for producing an arc upon receipt of said high voltage.

4,382,431

CIRCUIT FOR DECREASING OSCILLATOINS IN THE PRIMARY WINDING OF AN IGNITION COIL OF AN INTERNAL COMBUSTION ENGINE

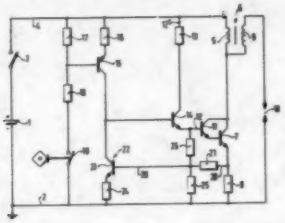
Bernd Bodig, Leinfelden, and Werner Jundt, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,122

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007335

Int. Cl.³ F02P 3/04

U.S. Cl. 123—644 **1 Claim**



1. In an ignition system having a source of electrical energy (1), ignition coil means having a primary winding (5) ignition switch means (3) for connecting said primary winding to said source of electrical energy when closed, semiconductor switch means (7,11) having emitter, collector and base electrodes and having its emitter-collector path connected in series with said primary winding, measuring resistor means (8) connected in series with said path of said switch means at a first common point, control circuit means (22,14) comprising an input transistor (23), an output transistor (14), and an output line (12) connecting said output transistor to said semiconductor switch means for supplying control current thereto, said control circuit also having an input line connected to a base of said input transistor and additional resistor means (21) interconnected between said first common point and said input line, said control circuit limiting control current to said semiconductor switch means when the current through said primary winding reaches a predetermined value: the improvement comprising

a feedback circuit branch composed entirely of an ohmic resistance (26) connected directly between said input line and said output line of said control circuit means for preventing oscillations across said primary winding from resulting from said limiting of said current through said primary winding.

4,382,432

BARBECUE GRILL WITH VERTICALLY ADJUSTABLE GRATE

Thomas E. Lizdas, 1 Mardale R.R. 4, Paris, Ill. 61944

Filed Apr. 5, 1979, Ser. No. 27,300

Int. Cl.³ A47J 37/00

U.S. Cl. 126—25 A **9 Claims**

1. An outdoor barbecue grill for cooking meat or other foodstuffs over a bed of hot coals, which comprises:

kettle means for containing the foodstuffs to be cooked and the hot coals for cooking the same;

grill means supported by the said kettle in the upper interior portion thereof;

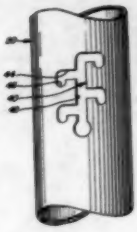
generally vertical support means for supporting said kettle in an elevated position, said support means defining a slot, said slot including a generally vertically extending segment and at least one generally horizontally extending segment communicating with said vertical segment;

grate means adapted for positioning in the interior of said kettle below said grill means;

an ash pan adapted for positioning in the interior of said kettle below said grate means;

a generally vertical post member positioned adjacent said support means, generally horizontal handle means having one end secured to said post member, a midportion that extends through said slot, and an opposite end which extends away from said support means and is grippable by a user;

said post member having an upper end that engages either



said ash pan or said grate means, the one of said ash pan and said grate means that is not so engaged being supported by (1) a lower interior portion of the kettle means where said non-engaged element is the ash pan and (2) the ash pan where said non-engaged element is the grate means,

whereby said grate means is vertically adjustable relative to said grill means by moving said handle means in said slot from a first position at a predetermined height to a second position at a different predetermined height.

4,382,433

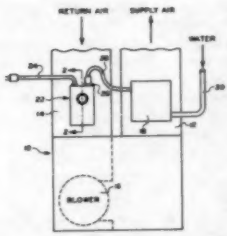
COMBINED HUMIDISTAT AND ELECTRONIC AIR FLOW RESPONSIVE SWITCH

George E. Hess, St. Louis, Mo.; Donald E. Donnelly, Edwardsville, Ill., and Robert E. Reinwart, St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 22, 1982, Ser. No. 370,982

Int. Cl.³ F24F 3/14; G01F 1/68

U.S. Cl. 126—113 **4 Claims**



1. In a control device adapted to be mounted on the return air duct in a forced air heating system for enabling operation of a humidifier in the presence of circulating air flow through the return air duct and preventing operation thereof in the absence of circulating air flow,

a humidistat switch;

a humidity sensing element exposed to the interior of the return air duct for controlling operation of said humidistat switch in response to relative humidity of air within said return air duct;

a thermistor mounted in a restrictive passageway in communication with ambient air surrounding the device and with said air within said return air duct; and

circuit means connected in circuit with said humidistat switch for effecting heating of said thermistor, for effecting energizing of said humidifier in response to cooling of said heated thermistor by ambient air flow through said passageway past said thermistor, said ambient air flow being caused by a pressure drop between said ambient air and said air in said return air duct when the circulating air flow exists, and for effecting de-energizing of said humidifier in the absence of said cooling when said circulating air flow does not exist.

4,382,434

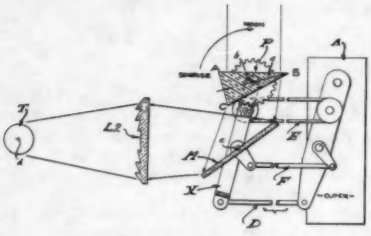
PRISMATIC TRACKING INSOLATION COLLECTOR

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91348

Continuation-in-part of Ser. No. 30,328, Apr. 16, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,838

Int. Cl.³ F24J 3/02

U.S. Cl. 126—425 **13 Claims**



1. A tracking insolation collector for operation in a plane substantially normal to the altitude traverse of the sun, and including;

an elongated prism of acute apex angle rotatably mounted on a rotational axis disposed in said plane for tracking the altitude of the sun and for maintaining said acute apex angle away from the zenith position of the sun,

the prism being reversible and having divergent faces used alternately for the reception and transmission of sun rays and dispersion thereof along a mean plane respectively,

an elongated mirror coextensive with and rotatably mounted on an axis disposed along said mean plane and reflecting the incoming sun rays to a target line,

a clock drive means comprising operating means to maintain the said reception face of the prism substantially normal to the incoming sun rays, operating means to maintain the said acute apex angle of the prism away from the zenith position of the sun, and operating means to rotatably position the mirror to reflect onto said target line,

and an elongated insolation responsive target coextensive with said prism and on said target line and spaced from and parallel to the axes of prism and mirror rotation.

4,382,435

ROOFING PANELS

Kenneth O. P. Brill-Edwards, Morriston, Wales, assignor to Cresent Roofing Company Limited, Swansea, Wales

Continuation-in-part of Ser. No. 13,511, Feb. 23, 1979, Pat. No. 4,278,071. This application Mar. 24, 1980, Ser. No. 133,403

Claims priority, application United Kingdom, Feb. 24, 1978, 7426/78, May 24, 1979, 18202/79

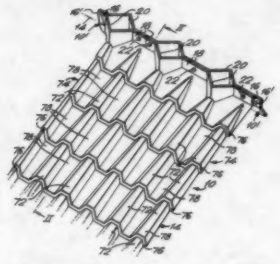
Int. Cl.³ F24J 3/02

U.S. Cl. 126—429 **28 Claims**

1. A roofing panel for a building including at least one flank wall having a top, said building further including a ridge and a roof having a slant height between said top and said ridge, and eaves being formed on the roofing panel at the top of the flank wall, said roofing panel comprising an outer skin of an inert structural material for spanning from said eaves to said ridge;

a fixing formation at the ridge and adapted to engage a counterpart formation on a similar panel and being provided with a valley whereby to define a ventilation gap between the panels;

an integral longitudinal stiffening beam on the underside of said outer skin extending substantially from the eaves to the ridge;



a generally flat inner liner of impervious sheet material sealed along a pair of longitudinal lines to said outer skin and spaced therefrom by engagement with said longitudinal stiffening beams so as to form a substantially unobstructed tunnel between said outer skin and said inner liner extending from substantially the eaves to the ridge, and

means for sealing the inner liners to a counterpart liner on said similar panel.

4,382,436

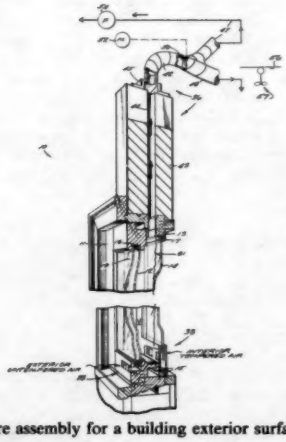
SOLAR WINDOW

I. Vincent Hager, P.O. Box 5845, Hilton Head Island, S.C. 29928

Filed Mar. 24, 1981, Ser. No. 247,011

Int. Cl.³ F24J 3/02

U.S. Cl. 126—429 **2 Claims**



1. A closure assembly for a building exterior surface, comprising:

a first frame member;

a first transparent solid sheet supported by said first frame member;

a second frame member;

a second transparent solid sheet supported by said second frame meber;

means for spacing said first and second frame members and

corresponding transparent sheets so that said sheets are substantially parallel and define an open volume therebetween;

means mounted in said open volume for selectively allowing the passage of light from said first transparent sheet to said second sheet, or preventing the passage of light from said first transparent sheet to said second transparent sheet, said means comprising a pair of spaced rollers, and a sheet rolled up on said rollers, said sheet having transparent portions having substantially the same length and height as said volume between said transparent sheets and varying in transparency, and a distinct opaque portion having substantially the same length and height as said volume;

first vent means for selectively allowing or preventing passage of air from exteriorly of said first frame member to a volume between said reflecting means and said first frame member; and

second vent means for allowing passage of air from within the volume between said reflecting means and said first frame member to a remote area.

4,382,437

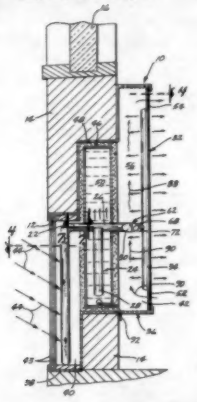
SELF-CONTAINED PASSIVE SOLAR HEATING SYSTEM

James E. Woods, Jr., and Eduardo A. B. Maldonado, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 101,153, Dec. 7, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 279,854

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—433 **22 Claims**



1. A heat transfer device, comprising,

a first heat pipe having a refrigerant medium therein and having a condenser portion and an evaporator portion, said evaporator portion being exposed to a source of solar heat,

a second heat pipe having a refrigerant medium therein and having a condenser portion and an evaporator portion,

the condenser portion of said first heat pipe being coupled to the evaporator portion of said second heat pipe for transfer of heat from the condenser portion of said first heat pipe to the evaporator portion of said second heat pipe when the pressure within said first heat pipe is greater than the pressure within said second heat pipe,

a third heat pipe coupled to said second heat pipe,

said third heat pipe including a refrigerant medium therein and a thermostatic portion in contact with the ambient medium of an area to be heated, and

said second heat pipe having a coupling portion in contact with said ambient medium for transferring heat thereto at times.

11. A method of passively transferring solar heat, comprising,

providing first and second heat pipes, each having a refrigerant medium therein, an evaporator portion and a condenser portion,

coupling the condenser portion of said first pipe in thermal communication with the evaporator portion of said second heat pipe,

providing a third heat pipe having a refrigerant medium therein and a thermostatic portion,

exposing the evaporator portion of said first heat pipe to a source of solar heat,

exposing the condenser portion of the second heat pipe to a medium cooler than said source of heat thereby transferring heat from the condenser portion of said first heat pipe to the evaporator portion of said second heat pipe and from the condenser portion of said second heat pipe to said medium,

exposing said thermostatic portion of the third heat pipe to said medium to be heated, and

increasing the size of said condenser portion of the second heat pipe in response to a decrease in pressure in said thermostatic portion occasioned by a decrease in the temperature of said medium, thereby increasing the rate of heat transfer to said medium.

4,382,438

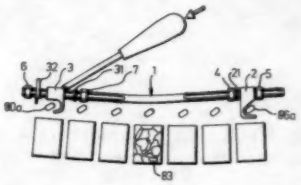
INSTRUMENT FOR TREATMENT OF SPINAL FRACTURES, SCOLIOSIS AND THE LIKE

Rae R. Jacobs, Kansas City, Kans., assignor to Synthes AG, Chur, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,557

Int. Cl.³ A61F *5/01*

U.S. Cl. 128—69 **5 Claims**



1. An instrument for the treatment of spinal fractures, scoliosis and the like comprising a rod threaded at each end and having a flat at each end, a hook at each end of the rod for engagement with a vertebra, said hooks being movable axially of the rod and rotatable about the rod, and means for securing said hooks at selected positions axially of the rod and angularly about the axis of the rod, said securing means comprising two nuts engaging said threads at each end of the rod, there being a nut on each side of each hook, and a washer at each end of the rod between one of said nuts and its adjacent hook, each washer having a flat engaging the flat on the rod, and radially directed ribs on said washer and on the adjacent face of said hook to prevent rotation of said hooks when said washer is pressed against said hook.

4,382,439

THUMB SPICA

C. Anthony Shen, 13800 Arizona St., Ste. 101, Westminster, Calif. 92683

Filed May 21, 1981, Ser. No. 265,974

Int. Cl.³ A61F *5/10*

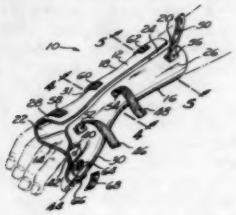
U.S. Cl. 128—77 **13 Claims**

1. A device for securely immobilizing an individual's wrist, hand and thumb for treatment of injuries to the wrist, hand and thumb, comprising:

an open ended integral body formed into a shell of semi-rigid material and having forearm, hand and thumb portions shaped to accommodate and immobilize an individual's forearm, hand and thumb, respectively,

said body having means for permitting it to be easily slipped on and off the individual,

said thumb portion having means for adjusting its size allowing the thumb portion to expand upon swelling or entry of the individual's thumb into said thumb portion and for tightening around the thumb after entry of the thumb to provide secure immobilization,



said forearm portion having a bulge for accommodating an individual's distal ulnar prominence to permit the forearm portion to fit tightly against and immobilize the forearm without causing harmful compression of the wrist area,

said forearm portion having flat areas in opposing relation to prevent rotation and provide secure immobiliation of an individual's forearm within the device and positioned to seat flush against the top and bottom of an individual's forearm in an area in which the forearm has substantial fat and muscle tissue.

4,382,440

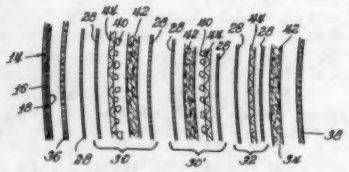
SMOKE AND POLLUTANT FILTERING DEVICE

Nancy J. Kapp, 73 Drexel, La Grange, Ill. 60525, and Charles H. Bennett, 8320 Russell, Utica, Mich. 48087

Filed Mar. 18, 1981, Ser. No. 244,904

Int. Cl.³ A62B 7/10

U.S. Cl. 128—201.25 **14 Claims**



1. A smoke and pollutant filtering device comprising a series of contiguous layers of filtering material, consisting of

a. front and rear gas permeable covers,

b. a first filter layer of pressed vegetable matter adjacent said front cover,

c. a second filter layer comprising a layer of activated charcoal adjacent a layer of aqua filter floss, and including means to maintain said layer of activated charcoal adjacent said layer of aqua filter floss,

d. a third filter layer comprising a gas permeable cloth situated between layers of pressed vegetable matter, and

e. a fourth filter layer comprising an aqua filter floss, said fourth filter layer being adjacent said rear cover.

4,382,441

DEVICE FOR TREATING TISSUES, FOR EXAMPLE SKIN

Pal Svedman, Sibbarpsvägen 47 A, S-216 11 Malmö, Sweden

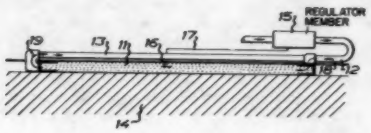
PCT No. PCT/SE79/00246, § 371 Date Aug. 6, 1980, § 102(e) Date Aug. 5, 1980, PCT Pub. No. WO80/01139, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 200,501

Claims priority, application Sweden, Dec. 6, 1978, 7812541

Int. Cl.³ A61M 37/00

U.S. Cl. 604—291 **18 Claims**



1. A device for treatment of tissue, comprising:

a dressing formed of a porous material having first and second opposed major surfaces;

said first major surface being exposed;

a fluid supply pipe delivering fluid supplied thereto directly to only a first portion of said dressing;

a fluid removal pipe directly receiving fluid exiting said dressing at a second portion of said dressing only, said second portion being spaced from said first portion;

the internal structure of said dressing causing fluid entering said fluid supply pipe to migrate from said first portion to said second portion of said dressing as a result of the capillary action of said porous material.

4,382,442

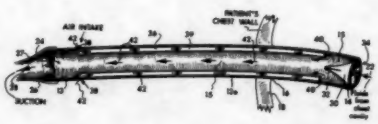
THORACOSTOMY PUMP-TUBE APPARATUS

James W. Jones, 4108 James Dr., Metairie, La. 70003

Continuation of Ser. No. 899,547, Apr. 24, 1978, abandoned. This application May 5, 1980, Ser. No. 146,504

Int. Cl.³ A61M 1/00

U.S. Cl. 604—28 **16 Claims**



1. A thoracostomy pump-tube apparatus comprising:

a. tube means for conveying fluids from the lung cavity area of a patient to an area external therefrom, said tube means having proximal and distal end portions, said distal end portions being normally inserted into the lung cavity area of a patient during a thoracostomy;

b. valve means placed in the distal end portion of said tube means for allowing the single direction flow of fluids from said lung cavity area into said tube means and past said valve means with said valve means disallowing backflow of fluids from within said tube means back into the patient's chest cavity;

c. fluid discharge means operative within said tube means for continuously assisting the removal of fluids from said tube means which fluids have entered said tube means through said valve means;

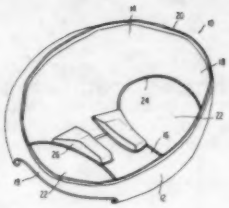
d. said fluid discharge means positioned adjacent to the valve means and placed within the walls of the tube.

4,382,443

MATERNITY SIT-EASE PANTIES

Frances E. Shafer, and Lynn O. Shafer, both of APO, New York, N.Y. 09102

Filed May 19, 1981, Ser. No. 265,093
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—396 **9 Claims**



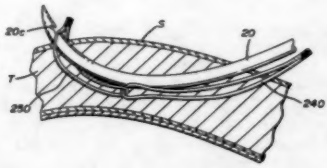
1. In a bifurcated nether garment having a front panel joined to a rear panel by side segments and a crotch segment with elastic bands encompassing the waist and leg openings, a catamenial receiver secured to said crotch segment in the central portion thereof with the longitudinal axis of said catamenial receiver coinciding with the longitudinal axis of said crotch segment, a pair of pockets secured to said crotch segment on opposite sides of said catamenial receiver with the longitudinal axis of said pockets being parallel to the longitudinal axis of said crotch segment, said pockets projecting towards said rear panel and pad members positioned in said pockets for supporting the body weight of a wearer of said garment in a sitting position to maintain the body of said wearer spaced from said catamenial receiver.

4,382,444

HAIR REPLACEMENT METHOD

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Continuation of Ser. No. 935,521, Aug. 21, 1978, Pat. No. 4,346,713, which is a continuation-in-part of Ser. No. 867,482, Feb. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 855,272, Nov. 28, 1977, abandoned. This application Sep. 16, 1981, Ser. No. 302,666
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—330 **25 Claims**



17. A method of securing replacement strands of hair to the head of a human being comprising the steps of:

(A) forming a unit consisting of a pair of interconnected, U-shaped loops each formed from a strand of hair and each having a base and opposed ends, each strand extending continuously and directly from an opposed end to the base to the other opposed end;

(B) engaging said unit with a suitable penetrating instrument;

(C) penetrating the scalp with said instrument and positioning said unit beneath the scalp with the point of interconnection of said strands disposed adjacent the point of deepest penetration and with the open ends of said loops projecting above the scalp; and

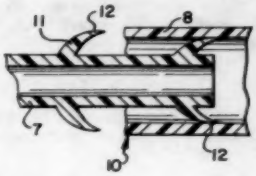
(D) repeating steps A through C until the desired density of scalp coverage is obtained.

4,382,445

PHYSIOLOGICAL FLUID SHUNT SYSTEM AND IMPROVEMENTS THEREFOR

Michael W. Sommers, Chicago, Ill., assignor to Cosmos Research Associates, Elgin, Ill.

Filed Dec. 4, 1980, Ser. No. 212,987
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—8 **4 Claims**



1. A catheter assembly for a physiological fluid shunt system comprising:

catheter means for draining fluid from a source of a patient, said catheter means having a first tubular section and a second tubular section, each of said tubular section being adapted to be restrained at an end portion by attachment to the patient's body,

said first tubular section having an outer diameter less than the outer diameter of said second tubular section,

at least a position of said first tubular section being concentrically inserted within at least a portion of said second tubular section in spaced relationship to permit relative movement automatically therebetween in response to the application of tensile force to said catheter means as a result of physiological growth of the patient,

sealing means disposed between said first and second tubular sections to permit said relative movement and prevent the passage of fluid being drained through the space therebetween, said sealing means includes at least one continuous annular gasket member extending between said first and second tubular sections and frictionally contracting one of said first and second tubular sections,

said at least gasket member includes a one continuous flange member coupled to said first tubular section and extending outward to contact said second tubular section at a peripheral edge portion, said flange member having an outer diameter greater than the inner diameter of said second tubular section to cause said flange member to deflect at said end portion and create sealing contact therewith while permitting relative movement between said first and second tubular members in response to physiological growth of the patient,

said sealing contact occurring at an outer region of said flange member adjacent said edge portion for attaining enhanced sealing contact and preventing relative movement except as a result of the forces generated by the patient's physiological growth.

4,382,446

HEAT TRANSFER DEVICES FOR THE SCALP

Donald E. Truelock, Moberly, Mo., and Richard W. Turner, Alpine, Calif., assignors to Kay Laboratories, Inc., San Diego, Calif.

Filed Oct. 23, 1980, Ser. No. 199,738
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 **37 Claims**

1. A heat exchanging head piece for cooling or heating the entire scalp (hair bearing) area of the human head, comprising, in combination:

an elongate, substantially rectangular headband portion adapted to be continuously and circumferentially wrapped around a human head, including the forehead,

the temple-ear head side zones and the lower back portion of the cranial vault,

said headband portion having substantially parallel, spaced apart, opposed upper and lower edges and end edges, the latter substantially at right angles to the former, as well as two free ends at the end edges thereof,

means engageable between the free ends of the said headband portion adapted to secure said free ends together, in contact with one another, to form a continuous headband,

said headband portion comprising an elongate hollow bag of sealed, liquidtight construction, said bag containing materials for heat exchange,

a crown portion for said head piece having a forward edge secured centrally to the substantial center of the uper edge of the headband portion, side edges extending rearwardly from the said forward edge securement and an end edge spaced rearwardly from and substantially parallel to the forward edge,

said crown portion comprising at least one elongate, hollow bag of sealed, watertight construction, said bag containing materials for heat exchange,

means at the end edge of said crown portion adapted to secure said end edge to a part of the said headband portion substantially 180° away from and opposed to the crown portion forward edge securement to the headband portion, and

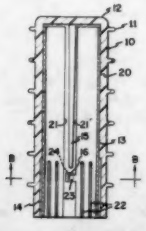
means for securing the upper edge of the headband portion to the side edges of the crown portion whereby to form, when the end edges of the headband portion are secured together, the end edge of the crown portion is secured to the headband portion and the upper edge of the headband portion are secured to the side edges of the crown portion, a continuous scalp contacting head piece for completely and uniformly heat exchanging the hair bearing zone of the human scalp.

4,382,447

HAIR ROLLER

Dov Z. Glucksman, 193 St. Botolph St., Boston, Mass. 02115

Filed Apr. 16, 1981, Ser. No. 254,869
Int. Cl.³ A45D 2/12
U.S. Cl. 132—33 R **9 Claims**



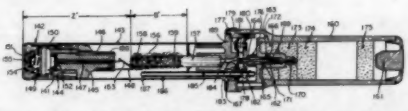
1. A hair roller adapted to be heated by being positioned on a cone-frustum shaped post of a hair roller heating apparatus, consisting of a hollow, cylindrical outer body, of a plastic material, provided with external hair gripping means, said body having a closed upper end and an open lower end, its hollow portion being cylindrical in its upper part, and tapering outwardly from the lower end of said cylindrical portion towards the lower open end; and of a metallic insert in the shape of a cylindrical tube of a length substantially equal to the length of the hollow portion of said outer body, said insert being slit longitudinally over its entire length, and being provided with a plurality of slots extending from the lower edge of said tube to a predetermined distance from said lower edge.

4,382,448

ELECTRICAL IGNITION SYSTEM FOR A CATALYTICALLY HEATED CURLING DEVICE

Curt Tittert, Dreieich-Götzenhain, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,331
Int. Cl.³ A45D 2/12
U.S. Cl. 132—33 R **3 Claims**



1. In a curling device having a tubular body defining a heating chamber therein, and having first and second ends and a hair winding portion disposed between the first and second ends and surrounding the heating chamber, heating means including a catalyst means disposed in the heating chamber, a housing member proximate the tubular body including fuel supply means for storing a fuel in a liquid state, and aspirating means coupled between the fuel supply means and the heating chamber for varporizing the fuel and for mixing the vaporized fuel with air and for supplying a vaporized fuel/air mixture to said catalyst means, the improvement comprising:

self-contained electrical ignition means mounted in the first end of the tubular body proximate the catalyst means for initiating oxidation of the vaporized fuel/air mixture in the presence of the catalyst means, said electrical ignition means including:

a battery mounted in said electrical ignition means;

an accessable electrically non-conductive movable button member affixed in the tip of said first end of said tubular body;

an electrically movable conductive means, movable with said button member and located between said button member and said battery;

an electrically conductive spring member located between said battery and said electrically movable conductive means;

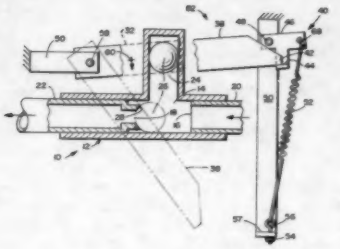
an incandescent filament, proximate said catalyst means, for oxidizing the vaporized fuel/air mixture in the presence of said catalyst means; and

a stationary electrically conductive means providing an electrical connection between said battery and said incandescent filament, wherein said electrically conductive spring member provides a biasing force to said electrically movable conductive means to prevent an electrical connection between said movable conductive means and said stationary conductive means unless said button member is moved a predetermined distance in a longitudinal direction of the device against the force of said spring member, when said button member is moved the predetermined distance, an electrical connection is made between said battery, spring member and said movable electrically conductive means and said stationary electrically conductive means, thereby electrically activating said incandescent filament.

4,382,449
MAGNETICALLY RESETTABLE EMERGENCY SHUT-OFF VALVE

Wesley C. Nelson, 698 S. 8th St., San Jose, Calif. 95112

Filed Jun. 29, 1981, Ser. No. 278,652
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—38 5 Claims



1. In an emergency shut-off valve (10) which comprises a valve body (12) of a non-ferromagnetic nature having a fluid tight chamber (14) having a fluid inlet (16) and a fluid outlet (18) communicating therewith, said chamber (14) having a region (24) spaced from said outlet (18), said outlet (18) having a seat (28), a valve member (26) of a ferromagnetic nature adapted to sit in a respective one of said region (24) and said seat (28), said valve member (26) being free from interference with fluid exiting said chamber (14) when in said region (24) and preventing fluid from exiting said chamber (14) when in said seat (28) and means (30) for normally detenting said valve member (26) into said region (24), an improvement comprising:

resetting means (32) external of said valve body (12) for magnetically moving said valve member (26) out of said seat (28) and into said region (24), said resetting means (32) including a magnet (32) normally biased into a first location adjacent said seat (28);

said valve member (26) normal detenting means (30) including means (82) for detenting said magnet (32) into a second location remote from said seat (28) and adjacent said region (24); and

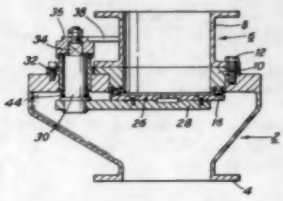
means (62) for releasing said magnet detenting means (82) for allowing said magnet (32) to move under and due to the influence of gravity to said first location in response to a seismic force of at least a selected magnitude being exerted upon said magnet detenting means (82) and for allowing said valve member (26) to move into said seat (28).

4,382,450
FLOW CONTROL VALVE ASSEMBLY

Maurice Tennick, Newlandside, England, assignor to Sendair International Limited, Tyne & Wear, England

Filed Mar. 6, 1981, Ser. No. 241,041
Claims priority, application United Kingdom, Mar. 8, 1980, 8007931
Int. Cl.³ F16K *25/00*; B08B *1/02*; F16K *3/10*
U.S. Cl. 137—242 9 Claims

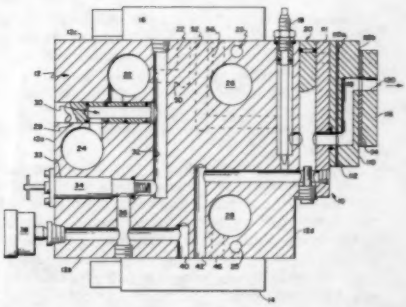
1. A valve assembly comprising a housing defining therein an inlet through which material can flow to the housing, a closure member having a planar closing surface and being mounted within the housing to be movable between an inoperative position remote from the inlet and an operative position aligned with the inlet, said closure member being mounted in the housing such that the plane of the closing surface is axially spaced from the inlet and such that the closure member is displaceable axially of the inlet towards said inlet, said spacing between the closing surface of the closure member and the inlet being adjustable, the valve assembly further comprising a deformable sealing ring mounted on the housing to surround said inlet and having a sealing surface protruding into the housing, and means for deforming the sealing ring whereby, on deformation, said sealing surface protrudes further into the housing, the arrangement being such that, during displacement of the closure member from its inoperative position to its operative position, the closing surface of the closure member first engages with the sealing surface of the sealing ring to be wiped thereby and to make initial sealing contact therewith, secondly, deformation of the sealing ring by the deforming means, with the closure member in its operative position, increasing the sealing contact between the sealing ring and the closure member, thirdly, subsequent pressurisation of the interior of the vessel serving to adjustably displace the closure member towards the inlet to increase further the sealing contact between the deformed sealing ring and the closure member, and sufficent pressurization serving to sealingly engage the valve closure member with the housing after the sealing ring has been fully deformed.



4,382,451
ELECTRONIC VALVE ASSEMBLY FOR GLASSWARE FORMING MACHINERY

Earl L. Lowe, Winchester, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 242,313, Mar. 9, 1981, abandoned, which is a continuation of Ser. No. 12,862, Feb. 16, 1979, abandoned. This application Apr. 21, 1982, Ser. No. 370,311
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.16 11 Claims



11. A valve block assembly adapted for cooperation with a plurality of valve means, each valve means having an inlet port and an outlet port, said valve block assembly comprising a body, first and second plenums disposed in said body and respectively coupled to different fluid supplies, a fluid passageway connected to each inlet port of said valve means, selector means connected to said valve block assembly for selectively coupling said first or said second plenum to said first passageway, an output passageway disposed in said body and communicating between the output port of said valve means and a valve block output port, a kissplate having input ports leading to respective machine elements, means for coupling the valve

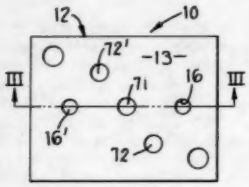
block output port to said input ports, said coupling means comprising a plate having first and second principal surfaces, one principal surface being adapted to mate with said valve block assembly, and the other principal surface being adapted to mate with said kissplate, said plate having apertures through said plate and disposed at positions corresponding to the disposition of the input ports, and channels disposed in and extending along one principal surface, said channels coupling said apertures to associated input ports.

4,382,452

EXHAUST FLOW CONTROL VALVE FOR MANIFOLD PLATE

Stanley M. Loveless, Oshtemo Township, Kalamazoo County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed Apr. 27, 1981, Ser. No. 258,081
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—625.43 **10 Claims**



1. A throttle valve assembly for controlling flow of fluid through a passage, comprising:

a housing having a straight flow passage extending therethrough, said housing also having a bore formed therein in intersecting relationship to said passage;

valve means movably positioned within said bore for adjustably restricting the flow of fluid through said passage, said valve means including an elastomeric sleeve coaxially aligned with and positioned within said bore and being axially movable therealong into a position wherein said sleeve extends across said passage, said valve means including an actuating member which is axially movably positioned within said bore and has said elastomeric sleeve mounted thereon in encircling relationship therewith;

relatively movable abutment means coacting with said elastomeric sleeve when the latter is in said position for resiliently axially compressing and radially deforming said sleeve into at least partial sealing engagement with said housing for restricting or preventing flow of fluid through said passage;

said abutment means including a first abutment disposed adjacent one side of said passage and fixed to said actuating member directly adjacent one axial end of said elastomeric sleeve for engaging the latter, said abutment means including a second abutment fixedly mounted relative to said housing adjacent the other side of said passage and disposed for direct engagement with the other axial end of said elastomeric sleeve, whereby movement of said actuating member in a selected axial direction relative to said housing causes said first and second abutments to relatively move toward one another and engage the opposite ends of said elastomeric sleeve and effect axial compression thereof accompanied by radial expansion of said sleeve into sealing engagement with said housing in surrounding relationship to said passage;

said bore being of a stepped configuration and including a first cylindrical opening of a first diameter extending inwardly from a peripheral wall of said housing through an axial extent whereby said first cylindrical opening is perpendicular to and intersects said passage, said first opening terminating at its inner end in an annular shoulder formed on said housing, which said annular shoulder defines said second abutment, said annular shoulder being disposed in close proximity to the periphery of said passage adjacent the side thereof which is remote from the open end of said bore;

said stepped bore including a second cylindrical opening of a second diameter which is smaller than said first diameter, said second opening being coaxially aligned with said first opening and extending inwardly from said shoulder, said second opening terminating at its inner end in a stop surface;

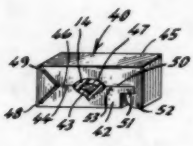
said actuating member including a first cylindrical portion on the outer axial end thereof which is snugly but rotatably and axially slidably accommodated within said first opening, said actuating member including a second cylindrical portion which is of smaller diameter than said first cylindrical portion and extends coaxially inwardly therefrom through a selected distance which at least slightly exceeds the diameter of said passage, said second cylindrical portion at its inner axial end being slidably accommodated within said second opening and adapted to abut against said stop surface, said first cylindrical portion at its interface with said second cylindrical portion defining thereon an annular abutment surface which comprises said first abutment and is disposed in axially opposed relationship to said second abutment as formed on said housing, said elastomeric sleeve being disposed in surrounding relationship to said second cylindrical portion and when in an uncompressed condition having an axial length greater than the diameter of said passage, said sleeve when in an uncompressed condition having an outer diameter which is approximately equal to said first diameter.

4,382,453

FLOW RISTRICTOR FOR FLEXIBLE TUBING

Albert F. Bujan, Waukegan, and Paul L. Pluta, Highland Park, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 52,387, Jun. 27, 1979, abandoned. This application Jun. 4, 1981, Ser. No. 270,776
Int. Cl.³ F16K *7/04*
U.S. Cl. 138—40 **8 Claims**



1. A flow restrictor device for controlling fluid flow through a length of flexible tubing comprising:

a base member;

a cover member;

hinging means interconnecting said base and cover members at one end of said members; and

frictional engaging means cooperatively associated with the other ends of said members to retentively hold said base and cover members in a face-to-face relationship;

said base member and said cover member defining oppositely positioned indentations for placement of tubing therebetween with at least one of said indentations constructed and arranged to provide lumen controlling expansion of said tubing as well as a constant size;

said base member and said cover member further defining flat sections adjacent said indentations;

so that when said length of tubing is positioned in said indentations and said cover and base members are held together by said engaging means, said flat sections will engage and said tubing will be contacted by said cover and base mem-

bers to a predetermined degree and expansion of said tubing is controlled in a limited manner by said indentations to provide a lumen of constant size during the flow of fluid therethrough.

4. A flow restrictor device for controlling fluid flow through a length of flexible tubing comprising:

a base member;

a cover member;

hinging means interconnecting said base and cover members at one end of said members; and

frictional engaging means cooperatively associated with the other ends of said members to retentively hold said base and cover members in a face-to-face relationship;

said base member and said cover member defining an oppositely positioned projection and indentation for placement of tubing therebetween said indentation constructed and arranged to provide lumen controlling expansion of said tubing as well as constant size;

said base member and said cover member further defining flat sections adjacent said projection and indentation;

so that when said length of tubing is positioned in said indentation and said cover and base members are held together by said engaging means, said flat sections will engage and said tubing will be contacted by said cover and base members to a predetermined degree and expansion of said tubing is controlled in a limited manner by said projection and indentation to provide a lumen of constant size during the flow of fluid therethrough.

4,382,454

BORON CANTILEVER PIPE

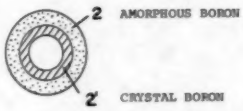
Masaki Aoki, Hirakata; Shigeru Yoshida, Kadoma; Hiroshi Yamazoe, Katano, and Masahiro Nagasawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 102,846, Dec. 12, 1979, Pat. No. 4,279,691. This application Mar. 17, 1981, Ser. No. 244,643

Claims priority, application Japan, Dec. 12, 1978, 53-153936

Int. Cl.³ F16L *9/14;* G11B *3/02*

U.S. Cl. 138—140 **4 Claims**



1. A boron cantilever in pipe form and composed of an inner layer of crystal boron and an outer layer of amorphous boron.

4,382,455

MULTIPLE PICK SYSTEM FOR A WEAVING MACHINE

Oskar Hübner, Constance, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 3, 1980, Ser. No. 212,421

Claims priority, application European Pat. Off., Dec. 27, 1979, 79 105381.2

Int. Cl.³ D03D *47/24*

U.S. Cl. 139—439 **4 Claims**

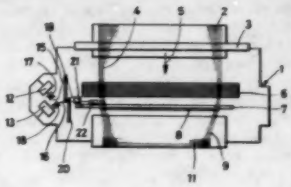
1. A multiple pick system for a weaving machine, said system comprising

a weft yarn feed means for feeding a plurality of yarns, said feed means including at least two parallel series of yarn control elements for controlling a respective yarn, each series of yarn control elements including at least one pair of said elements;

a weft yarn changer for receiving a yarn from a selected one of said series of control elements;

a plurality of drives, each said drive having a movable cam and a roller lever connected to a respective control element and spring biased toward said cam to follow said cam for actuation of said respective control element; and

a locking member movable into the path of each respective



roller lever to prevent said respective roller lever for following said respective cam, said roller levers of a respective series of control elements being disposed to engage said locking element on opposite sides.

4,382,456

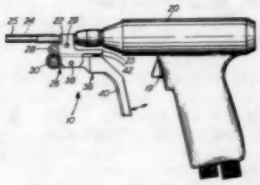
WRAPPING OF INSULATED WIRE

Willard E. Rapp, Griggstown, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,454

Int. Cl.³ B21F *7/00, 21/00*

U.S. Cl. 140—123 **8 Claims**



1. Apparatus for wire wrapping insulated wire, comprising:

a wire wrapping tool; and

means coupled to the tool for softening the insulation of an insulated wire to be wrapped by the tool prior to wrapping thereof.

4,382,457

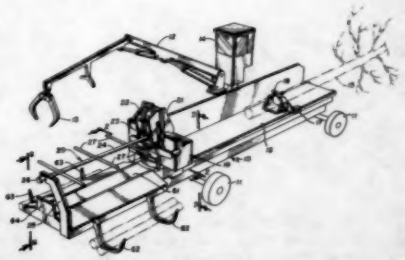
TREE HARVESTER

Raymond M. Hahn, P.O. Box 244, Two Harbors, Minn. 55616

Filed Feb. 3, 1981, Ser. No. 231,056

Int. Cl.³ B27L *1/00*

U.S. Cl. 144—2 Z **16 Claims**



15. A tree harvesting machine comprising:

(a) a support frame;

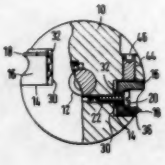
(b) an elongated bed carried by said frame and constructed and arranged to support thereon a tree to be harvested;

(c) a carriage movably carried by said frame for reciprocating movement longitudinally of said bed;
(d) powered means connected to said carriage for reciprocating the same longitudinally of said bed;
(e) limb-stripping means carried by said carriage and movable therewith and constructed and arranged to extend around the trunk of such a tree alternatively in either snug or loosely-engaging relation, as desired, when the tree is supported by said bed;
(f) actuator means connected to said limb-stripping means in actuating relation to cause the same to selectively engage the trunk of such a tree in either snug or loosely-engaging relation as desired. whereby said limb-stripping means will move such a tree longitudinally of said bed when in snug engaging relation thereto as said carriage moves rearwardly along said bed, and will strip the limbs off the trunk of such a tree when in loosely-engaging relation thereto as said carriage moves forwardly relative to the trunk of the tree;
(g) powered clamping means movably supported by said frame for vertical movement only above said bed at a fixed location relative thereto, and intermediate the extent of said frame and in position to receive and clamp the trunk of such a tree upon said bed;
(h) powered saw means carried by said clamping means adjacent to and rearwardly of said clamping means and movable therewith between the clamping and non-clamping positions thereof and constructed and arranged to saw off a section of the trunk of such a tree while the latter is clamped by said clamping means;
(i) said saw means being constructed and arranged for movement between a retracted and a tree-trunk sawing position;
(j) powered control means connected to said saw for controllably moving the same between its said positions; and
(k) controllably selective rotary ejector means carried by said frame and constructed and arranged relative to said bed, clamping means, and saw means to be selectively rotated and engage such a cut section of a tree trunk to thereby selectively eject the same to either side of said bed as desired.

4,382,458
PLANING TOOL

Fritz Schädlich, Leinfelden-Echterdingen; Gerhard Armbruster, Stuttgart, and Klaus-Dieter Jaspert, Filderstadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 167,326
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940398
Int. Cl.³ B27G *13/04*
U.S. Cl. 144—230 **12 Claims**

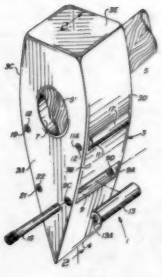


1. A planing tool, particularly for a manually operable planing machine, comprising a body having an axis of rotation, a peripheral surface and a plurality of elongated grooves on said peripheral surface, said grooves extending substantially in an axial direction and being spaced from one another in a circumferential direction, each of said grooves being limited by a bottom wall; a plurality of elongated inserts each carrying an elongated planing knife and inserted in a respective one of said grooves; adjusting means arranged to adjust the radial distance between said inserts and said axis of rotation of said body, said adjusting means including a plurality of adjusting screws each extending in a substantially radial direction and having a projection; clamping means arranged to clamp said inserts in said grooves of said body, said clamping means including a plurality of clamping screws each movable between a clamping position in which it clamps one of said inserts in a respective one of said grooves, and unclamping position in which it releases the same so that said insert can be withdrawn from said one groove; means for receiving each of said adjusting screws, said receiving means including a through-going opening formed in each of said inserts so that each of said adjusting screws can extend through a respective one of said opening with play, and a threaded hole formed in said body so that each of said adjusting screws can be threaded into a respective one of said threaded holes; and means for pressing each of said inserts against said projection of a respective one of said adjusting screws, said pressing means including at least one spring element extending between the bottom wall of each of said grooves and a respective one of said inserts.

4,382,459
WOOD SPLITTING MAUL

Joseph Bartok, 2930 Highway 1131, Vidor, Tex. 77662

Filed Aug. 10, 1981, Ser. No. 291,189
Int. Cl.³ B26B *23/00*; B27L *7/00*
U.S. Cl. 145—2 R **9 Claims**

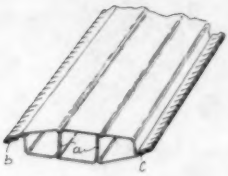


1. A maul for splitting wood, said maul comprising in combination:
(a) a maul head having first and second opposed inclined blade faces that each meet at one end to form a sharpened blade edge, said first blade face having therein a first bearing receiving recess and a second blade face therein, a second bearing receiving recess;
(b) first bearing means rotatably disposed in said first bearing receiving recess for engaging a first surface of a split in a log through which said maul head moves and forcing the first surface of the split outward from said first blade face to reduce friction between said first blade face and the first surface of the split; and
(c) second bearing means rotatably disposed in said second bearing receiving recess for engaging a second surface of the split and forcing the second surface of the split outward from said second blade face to reduce friction between said second blade face and the second surface of the split.

4,382,460
SLATS FOR ASSEMBLY INTO DOOR OR WINDOW SHUTTERS

Ram Ben-Tal, 11 Carmel St., Ramat Hasharon, Israel

Filed Nov. 23, 1981, Ser. No. 323,869
Int. Cl.³ E06B 3/12
U.S. Cl. 160—236 4 Claims



1. A structural member useful as a door or window closure consisting essentially of two mating identical longitudinal slats of cold-formed metal, said mating slats being assembled in facing opposed relationship in a reversed orientation relative to each other, each of said mating slats comprising:

a first edge folded upon itself to form a recess extending longitudinally along substantially the entire length of said slat and receiving therein in fitted engagement a lip member formed in the other of said mating slats;

a second edge located on the side of said slat opposite said first edge and formed to define a lip member extending substantially along the entire length of said slat, said lip member being arranged in fitted engagement within said recess formed along said folded first edge of said other slat; and

a rib member extending longitudinally of said slat essentially along the entire length thereof and protruding laterally from one said of said slat generally perpendicularly thereto, said rib member being formed by shaping said slat bent upon itself so that said slat is formed with parts thereof extending essentially in generally parallel relationship to form said rib member as a double-walled protruberance extending outwardly from said slat along the length thereof;

said rib member being located in each of said mating slats approximately one-third of the distance between said first edge and said second edge and closest to one only of said recess or said lip member, said rib member in each of said slats being always closest to the same one of said recess or said lip member so that when said mating slat members are assembled together, the rib member in one will extend across the interior of said structural member to the other mating slat, said structural member being thereby formed as a hollow piece having two approximately equally spaced longitudinal rib members extending across the enterior thereof with the lip member of each of said two mating slats being engaged in the recess of the other of said mating slats.

4,382,461
STAND-OFF SHIELD FOR UNCOVERED REFRIGERATED UNITS

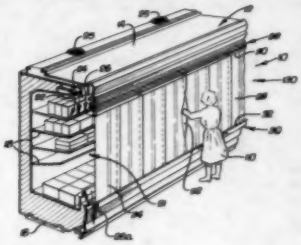
Allan Schenker, 17046 Burbank Blvd., #8, Encino, Calif. 91316

Continuation-in-part of Ser. No. 38,230, May 11, 1979, Pat. No. 4,310,044. This application Aug. 17, 1981, Ser. No. 293,672
Int. Cl.³ F06B 3/80
U.S. Cl. 160—329 25 Claims

1. A shield assembly for thermally isolating an aperture in a refrigerated device while permitting access to the aperture, comprising:

(a) a plurality of resilient, substantially transparent panels each having first and second ends, said panels arranged in a partially overlapping, side-by-side configuration and wherein said second end of said panels is spaced from said aperture so as to define an opening permitting air to flow from between said panels and said aperture to a location external to said refrigerated device;

(b) means disposed along the length of said panels, for stiffening and selectively retaining said panels in a predetermined pattern said stiffening means comprises an elongated member which extends from a first position adjacent a first end of a panel to a second position adjacent a second end of a panel;



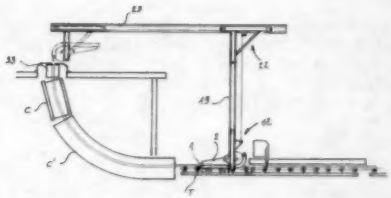
(c) mounting means disposed adjacent said first end of said panels for mounting said panels to said refrigerated device such that said panels extend across said aperture, said mounting means being rotatable about an axis generally perpendicular to the length of said panels; and

(d) means, disposed adjacent to and selectively engaging said second end of said panels, for maintaining said panels across said aperture.

4,382,462
UNIT IN A CONTINUOUS CASTING INSTALLATION FOR POSITIONING A DUMMY BAR

Joseph Pietryka, Paris; Joël Cazaux, Chelles, and Andre Guyot, La Neuville Thumeries, all of France, assignors to Fives-Cail Babcock, Paris, France

Continuation of Ser. No. 44,632, Jun. 1, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,409
Claims priority, application France, Jun. 14, 1978, 78 17725
Int. Cl.³ B22D 11/08
U.S. Cl. 164—426 14 Claims



1. A unit in a continuous casting installation for positioning a dummy bar in preparation of a casting operation, the casting installation comprising a mold for producing a continuous casting attached to the dummy bar and an end station wherein the dummy bar is separated from the continuous casting, and the unit comprising a basket capable of receiving the separated dummy bar, a handling system for moving the basket from the end station to a position above the mold, the system including a lifting frame capable of holding the basket, a raising means having one end attached to the lifting frame for vertically raising the lifting frame, a travel frame supporting an end of the raising means opposite to one end, the travel frame

having two vertical uprights capable of receiving and guiding the raised lifting frame, a horizontal pathway supporting the travel frame for movement to and from the position above the mold, two fixed uprights mounted on re-

spective sides of the basket at the end station for vertically displacing the lifting frame towards the uprights of the travel frame, the fixed uprights and the uprights of the travel frame being of the same cross section and the uprights of the travel frame being capable of being moved into registry with the fixed uprights by a displacement of the travel frame along the horizontal pathway, and means for introducing the dummy bar from the basket into the mold from above.

4,382,463

AIR CONDITIONING SYSTEM FOR MOTOR TRUCK

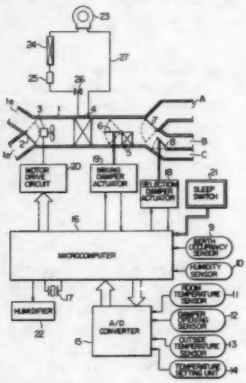
Munemitsu Ikebukuro, Aichi, Japan, assignor to Nippondenso Co. Ltd., Kariya, Japan

Filed Jun. 29, 1981, Ser. No. 278,611

Claims priority, application Japan, Apr. 25, 1980, 55-115983; Jun. 30, 1980, 55-89013

Int. Cl.³ B60H *3/00*

U.S. Cl. 165—12 **11 Claims**



1. An air conditioning system for a motor truck having a berth in a driver's cab comprising:

means for introducing air;

temperature control means for automatically controlling the temperature of the introduced air according to a program;

air distribution means for distributing the temperature-controlled air into the driver's cab, said air distribution means including duct means for distributing at least part of the temperature-controlled air to the vicinity of said berth and switching damper means adapted to open or close the inlet of said duct means;

means for generating a signal for carrying out the air conditioning mainly in a space in which said berth is installed;

means responsive to said signal for changing said program to a program for carrying out the air conditioning mainly in said berth space; and

actuating means responsive to said signal for causing said switching damper means to open said inlet of said duct means.

4,382,464

RADIATOR

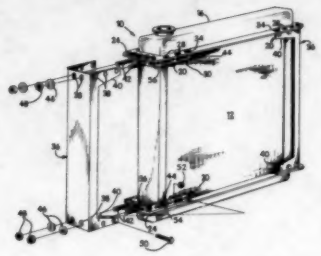
William Melnyk, Lathrup Village, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 12, 1981, Ser. No. 292,311

Int. Cl.³ F28F *7/00*

U.S. Cl. 165—76 **6 Claims**

1. A radiator comprising a core assembly, a headsheet mounted on each of the top and bottom ends of said core assembly, a tank bolted to each headsheet with sealing means therebetween, connector members including a horizontal flange portion mounted on said headsheet at each corner of said radiator and a vertical flange portion extending adjacent said core assembly, means associated with said connector members for providing access inside said vertical flange portion in order to permit repair of corner leaks, and a side channel removeably and adjustably mounted on said vertical flange portion of each upper and lower connector member, with removal thereof being possible without having to break the tank-to-headsheet sealed joint.



4,382,465

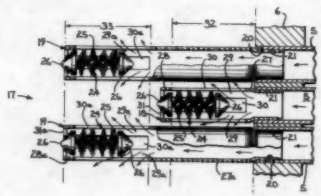
CLEANING ARRANGEMENT FOR HEAT EXCHANGE TUBES

Walter J. Baron, and Laird C. Cleaver, both of Milwaukee, Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Filed Nov. 23, 1981, Ser. No. 324,023

Int. Cl.³ F28G *1/12*

U.S. Cl. 165—95 **6 Claims**



1. In a heat exchanger having a housing containing a plurality of fluid flow tubes arranged with exposed open ends adapted to communicate with a housing chamber, the combination comprising:

(a) a plurality of groups of closely adjacent longitudinally extending cages disposed in said chamber for capturing and holding shuttle type tube cleaning elements therein,

(b) mounting means for placing the inner ends of said cages in fluid communication with the interiors of said tubes,

(c) said cages having openings in their walls for allowing lateral outward discharge of fluid therethrough,

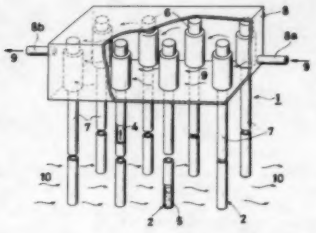
(d) one group of cages having their said openings disposed longitudinally outwardly of the openings in the other group of cages so that lateral outward discharge of water through the cage openings forms a plurality of generally discrete transverse planular fluid flow layers.

4,382,466

THERMOSIPHON

Masao Shiraishi, Ibaragi, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,490
Claims priority, application Japan, Sep. 1, 1980, 55-120742
Int. Cl.³ F28D 15/00
U.S. Cl. 165—104.11 4 Claims



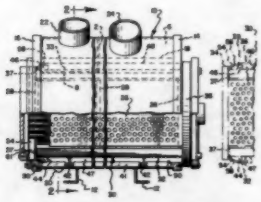
1. A thermosiphon having a working fluid sealed therein and comprising an evaporator section; a condenser section; a transport section connecting said evaporator section and said condenser section to each other; an annular chamber surrounding said condenser section, having a height smaller than the height of said condenser section and having the interior thereof filled with a heat storage material; and a fluid reservoir provided in the lower portion of said condenser section for receiving the working fluid which has been condensed within said condenser section, said fluid reservoir coming into contact with part of the inner wall of said annular chamber.

4,382,467

HEAT EXCHANGER OF THE TUBE AND PLATE TYPE

Maurice R. Garrison, Hamburg, and Victor J. Stachura, East Amherst, both of N.Y., assignors to American Precision Industries Inc., Buffalo, N.Y.

Continuation of Ser. No. 934,631, Aug. 17, 1978, abandoned.
This application Jan. 7, 1981, Ser. No. 223,114
Int. Cl.³ F28F 9/22
U.S. Cl. 165—159 12 Claims



1. In a heat exchanger of the type comprising a shell having a fluid inlet and a fluid outlet, a tube bundle longitudinally positioned in a spaced relation to said shell, and means directing fluid flow transversely through said tube bundle from an inlet side to an outlet side thereof, the improvement comprising:

a. means for restricting the transverse fluid flow to a flow only through said bundle; and

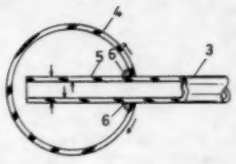
b. means for confining said transverse fluid flow within said bundle to exit only through said outlet side thereof.

4,382,468

FLAT PLATE HEAT EXCHANGER MODULES

Peter J. Hastwell, 133 Mills Ter., North Adelaide, Australia (5006)

PCT No. PCT/AU80/00014, § 371 Date Jan. 17, 1981, § 102(e) Date Jan. 6, 1981, PCT Pub. No. WO80/02590, PCT Pub. Date Nov. 27, 1980
PCT Filed May 16, 1980, Ser. No. 227,088
Claims priority, application Australia, May 17, 1979, PD8841
Int. Cl.³ F28F 3/12, 9/16
U.S. Cl. 165—173 6 Claims



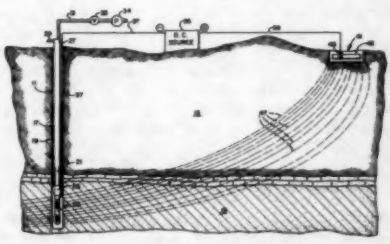
1. A heat exchange panel comprising a tube sheet connected at each end to a tubular header, characterised in that at least one end of the tube sheet extends into the header through a longitudinal opening such that the internally projecting end of the tube sheet resists the hoop stress in the header created by the application of fluid pressure in the header, further characterised in that said header is a tubular member with a longitudinal slot, and said tube sheet end passes through said slot to have its end situated within the header remote from the said slot, and sealing means sealing the slot edges to the surfaces of the tube sheet.

4,382,469

METHOD OF IN SITU GASIFICATION

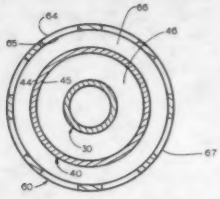
Christy W. Bell, Berwyn; Charles H. Titus, Newtown Square, and John K. Wittle, Berwyn, all of Pa., assignors to Electro-Petroleum, Inc., Wayne, Pa.

Filed Mar. 10, 1981, Ser. No. 242,277
Int. Cl.³ E21B 43/24, 43/26
U.S. Cl. 166—248 15 Claims



15. A process for yielding a gas from a subsurface formation of hydrocarbon material by treatment with direct electrical current, which process comprises providing an aqueous electrolyte in contact with said subsurface formation, providing at least two electrically conductive elements, constituting an anode and cathode, in contact with said electrolyte, passing a controlled amount of electrical current from a direct current source through said formation between said electrically conductive elements at a voltage of at least 0.3 volts and controlling the current relative to the composition of said material and the ambient conditions adjacent to said electrode to heat the the electrodes during application of said voltage to a temperature which is less than 500° F. and, and withdrawing from said formation the gas resulting from said treatment.

4,382,470
METHOD AND WELL CASING
Larry C. Naffziger, 3091 N. Monroe, Fresno, Calif. 93705
Filed Jul. 13, 1981, Ser. No. 282,395
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—369 **8 Claims**



1. In a water well having a hole extending from the earth surface through an upper aquifer and into a lower aquifer, a pump assembly mounted in the hole extending from a position within the lower aquifer to the earth surface and operable to pump water from said position to the earth surface, a casing comprising a first conduit mounted in the hole extending from within the lower aquifer to the earth surface substantially concentric to the pump assembly and having a first set of openings extending therethrough adjacent to said position and a second set of openings extending therethrough upwardly disposed with respect to the first set; and a second conduit mounted on the first conduit substantially concentric thereto forming a chamber circumscribing the first conduit communicating with said second set of openings and a third set of openings extending through the second conduit nearer to the upper aquifer than said second set of openings of the first conduit to establish a path for fluid movement from the upper aquifer through the third set of openings, the chamber, the second set of openings and to said position for pumping by the pump assembly.

5. A method for pumping water simultaneously from upper and lower aquifers below the earth surface, the method comprising:

A. forming a hole extending from the earth surface through the upper aquifer and into the lower aquifer;

B. mounting a casing in the hole having a first passage communicating with the lower aquifer and a second passage communicating with the upper aquifer and said first passage; and

C. securing a pumping assembly in the hole extending from a pumping position within the first passage adjacent to the position of communication of said first and second passages and operable to pump water from said pumping position.

4,382,471
LOW DAMAGE BEET CLEANER AND ELEVATOR
Charles L. Peterson, Moscow, Id., assignor to Idaho Research Foundation, Inc., Moscow, Id.
Filed Oct. 2, 1981, Ser. No. 307,765
Int. Cl.³ A01D *33/02*
U.S. Cl. 171—124 **6 Claims**

1. A low damage beet cleaner and elevator, comprising:

an endless elevator draper having an upwardly inclined delivery flight, the draper including:

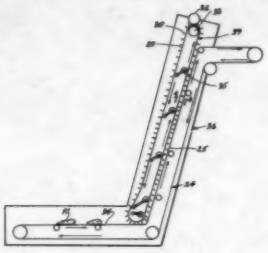
(a) a pair of parallel side chains;

(b) bars connected between the side chains transverse to the direction of draper travel;

(c) protruding lugs shaped into scraper points for cleaning the crevices of the beets, said lugs being arranged on an outward surface of the bars between the side chains and transverse to the direction of draper travel;

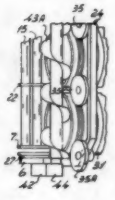
an endless, upwardly inclined belt having flexible, finger-like projections, said belt bearing against the delivery flight of the draper to elevationally lift the beets between the belt and the draper; and

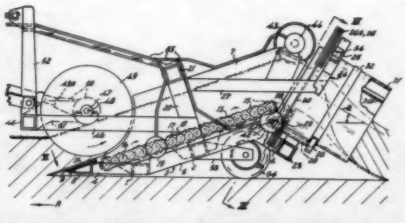
means operably connected to the elevator draper and the endless belt for driving the draper and the belt through their respective circuits, the belt being driven at a speed



faster than that of the draper, whereby the speed differential between the belt and the draper flexibly engages the finger-like projections with the beets and produces a brushing effect on the beets to clean them while they are being elevated for loading.

4,382,472
PLOW
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed Sep. 4, 1980, Ser. No. 184,180
Claims priority, application Netherlands, Sep. 7, 1979, 7906694
Int. Cl.³ A01B *9/00, 15/08*
U.S. Cl. 172—33 **7 Claims**





1. A plow for cutting and turning furrow slices comprising a frame with coupling points connectable to the three-point-hitch of a tractor, means adjacent the forward side of said plow for cutting and elevating furrow slices across the working width of the plow to the rear thereof, a plurality of drums rotatably mounted side-by-side to the rear of said elevating means to receive said furrow slices, driving means connected to rotate said drums about respective upwardly and forwardly inclined axes that extend generally in the direction of plow travel, said driving means being connectable to the power

take-off of the tractor, each drum having a front opening and a rear exit and said opening being located substantially above said exit, upper and lower rollers being positioned to support the outer surfaces of the drums adjacent the openings thereof, said rollers being journalled on a portion of said frame and said driving means being connected to rotate the lower rollers, further rollers being mounted on the frame portion to engage and support the outer surfaces of the drums to the rear of said first mentioned rollers, conveying means positioned immediately above and in front of the openings of the drums, said conveying means being a member having a transversely moving surface that engages the furrow slices and initiates the transverse displacement of said slices in a direction corresponding with the direction of drum rotation whereby said slices are urged into the openings of the drums.

4,382,473

SOIL CULTIVATING MACHINE

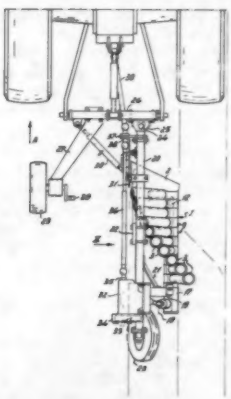
Ary Van der Lely, Maasland, and Arie Kuipers, Brielle, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Filed Dec. 11, 1980, Ser. No. 215,453

Claims priority, application Netherlands, Dec. 17, 1979, 7909060

Int. Cl.³ A01B 15/08

U.S. Cl. 172—33 **15 Claims**



15. A soil working machine comprising a frame with coupling means attachable to a prime mover and at least one tool, said tool having a guide for displaced soil, said guide comprising rotatable guide elements positioned one behind the other to successively receive and guide the displaced soil, said elements being mounted to rotate about respective axes and driving means connected to rotate said elements, said driving means including a change speed transmission that is connectable to a source of power, said transmission being located adjacent one end of said guide, said elements having ends supported by respective housings and the latter together comprising a hollow beam extending in the direction of machine travel, said housings being angularly adjustable relative to one another about the longitudinal axis of said hollow beam, a drive shaft housed within and coaxial with said hollow beam being connected to rotate said elements.

4,382,474

SOIL CULTIVATING IMPLEMENT COMPRISING A TINED HARROW AND A TRAILING BLADE ROTOR

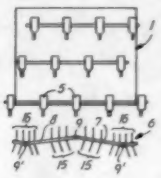
Finn U. H. Jensen, Vemmelev, and Sven-Age Randlov, Slagelse, both of Denmark, assignors to Kongskilde Koncernselskab A/S, Soro, Denmark

Filed Mar. 25, 1980, Ser. No. 133,909

Claims priority, application Denmark, Apr. 6, 1979, 1517/79

Int. Cl.³ A01C 5/06

U.S. Cl. 172—179 **1 Claim**



1. A soil cultivating implement comprising

a harrow having a transverse row of harrow tines;

a trailing earth surface levelling rotor device including a plurality of horizontal shaft sections which are inclined at respective opposite angles relative to said row of tines, and soil engaging cutting blades extending from the horizontal shaft sections;

said cutting blades forming a plurality of rings of cutting blades on said shaft sections for laterally displacing earth from the ridges left behind said harrow tines to at least partially fill up the furrows between such ridges;

said rings of cutting blades being arranged in spaced groups, each group comprising at least three of the rings of blades;

each space between adjacent groups being narrower than the width of each group and being substantially aligned, in the working direction of the implement, with a respective one of the tines of said transverse row of tines;

wherein the number of harrow tines in the transverse row of tines is uneven;

wherein said plurality of shaft sections comprise two central and two outer shaft sections;

said central shaft sections being symmetrical and being coupled to each other at the center of the implement at a point aligned with a central one of the harrow tines;

each of said central shaft sections forming an acute angle with the center axis of the implement and diverging from the center coupling point away from the row of tines;

said outer shaft sections being coupled to outer ends of the central shaft sections at points aligned with corresponding spaces between adjacent tines of said tines;

each of said outer shaft sections converging from the outer coupling points toward the row of tines;

said groups of rings of cutting blades including inner groups of rings of cutting blades on the respective central shaft sections aligned with spaces on opposite sides of the central tine and adapted to level ridges inwardly towards the center, and outer groups of rings of cutting blades arranged at the respective outer coupling points with inner pairs of cutting blade rings of the outer groups on outer ends of the respective central shaft sections and with outer pairs of cutting blade rings of the outer groups on inner ends of the respective outer shaft sections,

said outer groups of rings of cutting blades being spaced apart from said inner groups of rings of cutting blades by gaps corresponding in lateral position to the positions of said harrow tines which are on opposite sides of the central tine;

said inner pairs of cutting blade rings being operative to level inner ridge portions inwardly towards the center, and

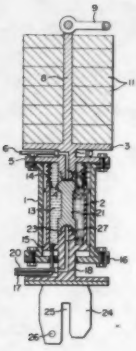
said outer pairs of cutting blade rings being operative to level outer ridge portions outwardly from the center.

4,382,475

HYDRAULIC HAMMERING APPARATUS

Tomio Suzuki, No. 7, Kanda-Nishiki-cho 2-chome, Chiyoda-ku, Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,334
Claims priority, application Japan, May 23, 1980, 55-68540
Int. Cl.³ B25D 9/04
U.S. Cl. 173—91 6 Claims



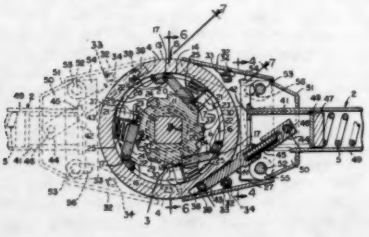
1. A hydraulic hammering apparatus wherein an upwardly opened fluid chamber is accommodated in a vertically movable manner within a longitudinal cylinder having a weight holding portion formed on the upper part of its top plate; the back of the top plate of the cylinder is sealedly connected with the opening of the fluid chamber by means of a diaphragm; water jet heads are provided oppositely to each other at the back of the top plate of the cylinder and the surface of the bottom plate of the fluid chamber respectively, said water jet heads being arranged to approach and space from each other in accordance with the vertical motion of the fluid chamber; and a hammering element is located between these water jet heads such that the upper and lower end parts of said element are formed for sealedly engaging and for disengaging from the respective water jet heads.

4,382,476

MANUAL TORQUE MAGNIFYING IMPACT TOOL

Oscar J. Swenson, 630 S. Poplar Way, Denver, Colo. 80224

Filed Dec. 3, 1981, Ser. No. 327,024
Int. Cl.³ B25D 15/02
U.S. Cl. 173—93.5 10 Claims



1. A manually operable torque magnifying impact tool comprising a rotary tool head, an annular inertia member around the tool head on a common axis therewith, a frame member transverse to the common axis at each end of said inertia member, a torque input handle extending transversely of said axis and connected to said frame member, an elongated power spring within said handle, coupling means between said power spring and said inertia member providing for storing and releasing energy, bearing means coaxial with said axis and attached to said frame member guiding said tool head, inertia member, frame member and handle for relative angular motion about said axis, said inertia member comprising a tube having a substantially uniform wall thickness with a continuous bearing surface at each end of said tube coaxial with said axis, said bearing surface engaging a mating bearing surface attached to said frame member to form a portion of said bearing means, said tool head comprising a cylindrical portion having a series of circumferentially equally spaced elongated ratchet teeth arranged thereon parallel to said axis, and an output drive portion extending coaxially along said axis at each end of the cylindrical portion, a pawl pivotally supported at one edge in a pawl seat attached to the inner side of said tube, said pawl biased by pawl spring means for engagement of its unseated edge with said ratchet teeth and a pawl retaining member attached to said tube cooperating with the unseated edge of the pawl to hold it pivotally in said seat, cam means rigid with the frame member for disengagement of the pawl from and reengagement of it with said ratchet teeth to produce impact against the ratchet teeth and torque on said tool head and output torque on said output drive portion as said handle is moved in a predetermined direction about said axis relative to said tool head, said cam means comprising a separate cam for disengagement and reengagement of each said pawl from said ratchet teeth in such instances as there is more than one pawl supported on said inertia member, each such separate cam being attached individually to said frame member, and interacting means between said inertia member and said handle providing for holding said inertia member rotationally immobile relative to said handle about said axis when said handle is not being moved in the said predetermined direction and for stopping the rotation of the inertia member relative to said handle about said axis by absorbing kinetic energy of rotation from the inertia member not delivered therefrom to the tool head as impact, said interacting means between said inertia member and said handle including a first stop member carried by said inertia member angularly movable about said axis relative to a second stop member carried by said frame member, said first stop member and said second stop member at times coming into forcible abutment with one another following said disengagement of said pawl to stop rotation of said inertia member, and a pivotal connection between said handle and said frame member to allow limited angular movement of said handle in one direction about said pivotal connection relative to said frame member about an axis parallel to the axis of said inertia member and remote from the centerline of said handle to cause partial compression of said power spring following said abutment of said first stop member with said second stop member.

4,382,477

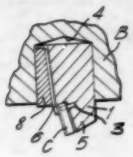
ROTARY DRILL BITS

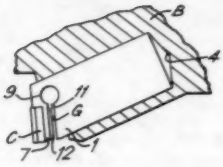
John D. Barr, Gloucester, England, assignor to Drilling & Service U.K. Limited, Gloucester, England

Filed Jan. 9, 1981, Ser. No. 223,836
Claims priority, application United Kingdom, Jan. 10, 1980, 8000606; Mar. 6, 1980, 8007686
Int. Cl.³ E21B 10/46
U.S. Cl. 175—410 17 Claims

1. A rotary drill bit for deep hole drilling or coring in subsurface formations comprising a body with a shank having a fluid bore, said body carrying a plurality of preform cutting elements and support members, in which each preform cutting element is loosely mounted in contact with the respective support member and flexible locating means are provided to hold the preform cutting element in contact with the support member and to reduce the bending strain in the preform cutting element caused by deflection of the support member in use of the bit, in which the flexible locating means comprises an

elongate locating means one end of which is fixed to the bit body at a position spaced from the support member and the





other end of which urges the preform towards the support member.

4,382,478

GAS BOTTLE CONTENTS GAUGE

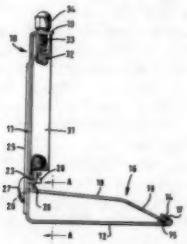
Geoffrey Hearn, 70 Redbridge La. West, Wanstead, London, England

Filed Jun. 29, 1981, Ser. No. 278,077

Claims priority, application United Kingdom, Jun. 28, 1980, 8021297

Int. Cl.³ G01G *23/14, 3/00*

U.S. Cl. 177—169 **12 Claims**



1. Apparatus for assessing the amount of releasable gas in a bottle of compressed gas resting on a support therefor, which apparatus comprises frame means, a lifting element mounted on the frame means for movement with respect thereto, a spring acting between said frame means and said lifting element, and an indicator arrangement including a scale and indicator combination one of which scale and indicator is movable relative to the other of said scale and indicator and is coupled to said lifting element for operation thereby on movement of said lifting element, said lifting element being adapted to be engaged with the gas bottle at such a location thereon that movement of said lifting element under the influence of the force exerted by said spring causes the gas bottle to pivot about a point on the lower periphery of the gas bottle, and said indicator arrangement having at least two markings respectively indicative of a full gas bottle and an empty bottle, there being adjusting means allowing said indicator of the indicator arrangement to be aligned with the 'full' marking on said scale when said lifting element is engaged with a gas bottle to cause pivoting thereof about said point on the lower periphery of the bottle under the action of said spring.

4,382,479

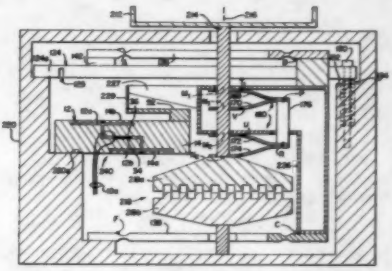
WEIGHING SYSTEM

Shih-Ying Lee, Lincoln, and Dennis K. Briefer, Berlin, both of Mass., assignors to Setra Systems, Inc., Natick, Mass.

Filed May 19, 1981, Ser. No. 265,088

Int. Cl.³ G01G *23/08, 21/24*

U.S. Cl. 177—189 **6 Claims**



1. A weighing system comprising:

A. force input member for supporting an object-to-be-weighed,

B. a rigid armature member,

C. first linkage including means for coupling said armature and a reference member whereby said armature is constrained to motion substantially parallel to a reference axis, said reference axis being fixed with respect to said reference member,

D. second linkage including means for resiliently coupling said force input member and said armature,

E. damper coupled between said force input member and said reference member, including relatively low friction damping means for damping relative motion of said force input member with respect to said reference member,

F. force transducer coupled between said armature and said reference member, said force transducer including a pair of complementary opposed surfaces having a mutual separation which is related to the force across said transducer,

G. a position sensor for generating a signal representative of the separation between said complementary opposed surfaces of said force transducer.

4,382,480

WEIGHING MACHINE WITH FLAT MAGNETS FOR ELECTROMAGNETIC TORQUE COMPENSATION

Erich Knothe, Bovenden; Christoph Berg, Adelebsen, and Franz-Josef Melcher, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 283,035

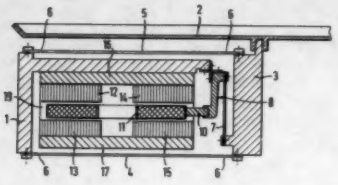
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029060

Int. Cl.³ G01G *7/00, 3/14*

U.S. Cl. 177—212 **10 Claims**

1. Weighing machine on the principle of the electromagnetic force compensation with a weighing pan, mounted with the pan on top, for the reception of the weighed stock and a movable coil, which is flowed through by current, is disposed in the air gap of a stationary permanent magnet system and generates the compensating force, characterized thereby, that the coil has approximately a rectangular shape, that the permanent magnet system consists of rectangular plates of magnetically active material with vertical direction of magnetisation above

and below the longer sides of the coil and of a soft iron short-circuit whereby a horizontal compensating force results, and



that means for force deflection are provided between coil and weighing pan.

4,382,481

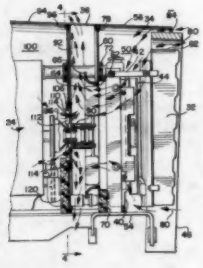
DUAL FAN ENGINE COOLING SYSTEM

R. Dale Moore, Wheaton, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 2, 1981, Ser. No. 230,978

Int. Cl.³ B60K *11/00*

U.S. Cl. 180—54 A **10 Claims**



1. In a motor vehicle having a fluid cooled engine the improvement comprising:

an engine compartment sound-reducing enclosure of said motor vehicle attenuating noise emanating therefrom and having a front wall with a fan port and an air intake aperture;

a heat exchanger sound-absorbing and air flow guiding enclosure of said motor vehicle spaced horizontally away from said engine compartment enclosure, said heat exchanger enclosure having a rearmost barrier provided with a heat exchanger compartment discharge port and air entry passages;

a discharge opening located between said engine compartment enclosure and said heat exchanger enclosure communicating with said fan port of said engine compartment enclosure and said heat exchanger compartment discharge port;

an engine compartment evacuation fan mounted for rotation within said fan port of said engine compartment enclosure for inducing air flow therefrom through said fan port to said discharge opening; and

a heat exchanger fan mounted for rotation within said heat exchanger compartment discharge port for inducing air flow through said heat exchanger compartment discharge port from said heat exchanger compartment to said discharge opening;

whereby said air flows from said engine compartment and said heat exchanger compartment impinge upon and blend with each other for conjoint discharge through said discharge opening.

4,382,482

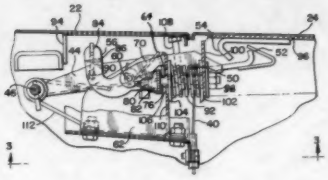
SECONDARY HOOD LATCH

Michael C. Brandl, Westmont; Charles H. Holm, Plainfield, and David T. Katsoka, Berwyn, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed May 13, 1981, Ser. No. 263,372

Int. Cl.³ B62D *25/10*; E05C *3/34*

U.S. Cl. 180—69 R **10 Claims**



1. In a tractor vehicle having an engine enclosing hood assembly utilizing a rear hood section and a front hood section mounted on rollers and capable of being rolled forward to provide access to said engine the improvement comprising:

a primary latch having a hood latch bolt horizontally fixed to a front hood bracket, a catch mounted for pivotal rotation on a primary pivot point mounted to said rear hood section, an unlatching bell crank lever pivotally mounted on said primary pivot point for urging said catch to an unlatched position;

a secondary latch pivotally mounted for limited motion to a secondary latch pivot point carried on said rear hood section, said secondary latch in close proximity to said primary latch and interconnected therewith through a linkage means connecting said secondary latch to said unlatching bell crank lever, said secondary latch extending forward from said rear hood section and including a latch hook and a hook fixed to said front hood bracket, said hook having an inclined face portion, said hook bite projecting toward the front of said vehicle for engagement with said latch hook;

a remote handle release connected by a cable to said secondary latch for urging said secondary latch away from said hook, said secondary latch progressively connected to said primary latch by said linkage means whereby said primary latch will be released after said secondary latch upon further displacement of said remote handle release;

a hood release handle located inside said engine compartment enclosure and accessible from outside said engine compartment enclosure pivotally mounted in said rear hood section connected to said secondary hood latch for unlatching said secondary hook latch from engagement with said hook.

4,382,483

LOAD-RESPONSIVE STEERING CONTROL VALVE

Joseph C. Spencer, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

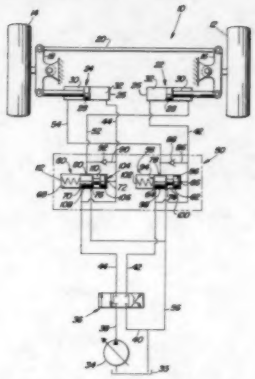
Filed Apr. 9, 1981, Ser. No. 252,649

Int. Cl.³ B62D *5/10*; F16H *39/48*

U.S. Cl. 180—153 **3 Claims**

1. A power steering system, comprising: a source of fluid pressure; a sump; first and second extensible and retractable hydraulic actuators; a manually operable main steering control valve; a supply conduit connected between the source and the valve, a drain conduit connected between the valve and the sump; first and second supply return lines respectively connected between the valve and respective first ends of the actuators, said valve being shiftable from a neutral position, wherein it blocks flow to and from the actuators, to a left-steer position wherein it connects the source to the first end of the first actuator while connecting a first end of the second actuator to the sump, and to a right-steer position wherein it connects the

source to the first end of the second actuator while connecting the first end of the first actuator to the sump; a load-responsive valve means; said first and second supply-return conduits being connected to said load-responsive valve means; third and fourth supply-return conduits connected between the load-responsive valve means and the respective second ends of the first and second actuators; said drain conduit being connected to the load-responsive valve means; said load-responsive valve means including a first one-way valve connected to permit flow from the third supply-return conduit to the second supply-return conduit and a second one-way valve connected to permit flow from the fourth supply-return conduit to the first



supply-return conduit; said load-responsive valve means including a pressure shiftable element means connected for sensing the pressure existing in the first ends of the actuators and operating, when the main steering control valve is in its right-steer position and the pressure in the first supply-return conduit is below and above a predetermined value, to respectively connect the fourth supply-return conduit to the drain conduit and to the first supply-return conduit and operating when the main steering control valve is in its left-steer position and the pressure in the second supply-return conduit is below and above the predetermined value, to respectively connect the third supply-return conduit to the drain conduit and to the second supply-return conduit.

4,382,484

FUEL-EFFICIENT ENERGY STORAGE AUTOMOTIVE DRIVE SYSTEM

David H. Anderson; Thomas F. Babbage, both of Portland, and Eugene F. Lucas, Lake Oswego, all of Oreg., assignors to Advanced Energy Systems Inc., Portland, Oreg.

Filed Sep. 4, 1980, Ser. No. 184,148
Int. Cl.³ B60K *9/00*; F15B *1/02*
U.S. Cl. 180—165 **28 Claims**

1. In a wheeled vehicle having an engine, a vehicle drive system comprising:

(a) energy storage means for collecting and storing energy;

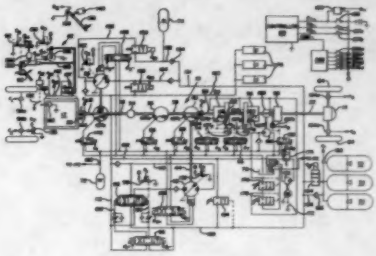
(b) power transmission means mechanically coupled to at least one wheel of said vehicle for driving said wheel;

(c) transmission control means for selectively connecting said power transmission means to said energy storage means for causing said power transmission means to receive energy from said storage means to drive said wheel;

(d) engine governor means connected to said engine for maintaining the speed of said engine within a predetermined speed range;

(e) sensing means for sensing the magnitude of the torque load imposed upon said engine; and

(f) variable torque application means coupling said engine to said energy storage means for delivering energy from said engine to said storage means for storage therein, said variable torque application means including means automatically responsive to said sensing means for automatically maintaining the torque load imposed on said engine



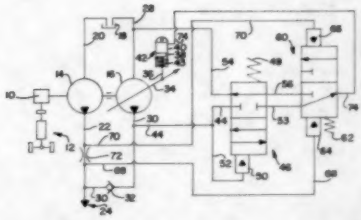
within a predetermined torque range while the speed of said engine is maintained within said predetermined speed range by said engine governor means.

4,382,485

HYDRAULIC LOGIC CONTROL FOR VARIABLE DISPLACEMENT PUMP

Steven C. Kirkham, McHenry, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 27, 1980, Ser. No. 153,118
Int. Cl.³ B60K *17/10*
U.S. Cl. 180—306 **4 Claims**



3. In a vehicle having an engine, a motive drive train driven by said engine, and a hydraulic work circuit including engine driven fixed and variable displacement hydraulic pumps, a control means for controlling the stroke of said variable displacement pump comprising:

a control ram for destroking said variable displacement pump upon the application of fluid pressure thereto;

a fluid pressure source disposed to supply fluid to said control ram;

an engine speed responsive valve hydraulically disposed between said control ram and said fluid pressure source having a first position permitting flow therethrough in response to a selected low engine speed and a second normal position prohibiting flow therethrough at higher engine speeds than said low engine speed;

a circuit pressure responsive valve hydraulically disposed between said control ram and said fluid pressure source having a first position permitting flow therethrough in response to a selected high pressure existing in said hydraulic work circuit and second normal position prohibiting flow therethrough in response to lower pressures in said work circuit than said selected high pressure; and

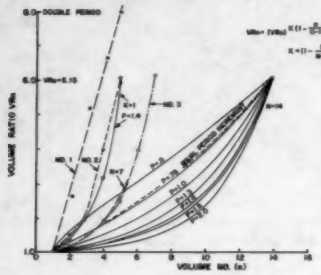
means operatively interconnecting said engine speed responsive valve and said circuit pressure responsive valve such that said fluid pressure is supplied to said control ram only when both said engine speed responsive valve and said circuit pressure responsive valve are in their respective first positions.

4,382,486

TUNED AIR GUN ARRAY

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,717
Int. Cl.³ G01V 1/34, 1/38
U.S. Cl. 181—118 3 Claims



1. A method of selecting volume ratios of air guns spaced apart in a seismic exploration array comprising the steps of:
selecting the largest individual volume of the desired array;
selecting the total number of air guns in the array;
determining the volume ratio for individual guns according to the equation

$$Vrn = (Vro)^{K(1-\frac{n}{N-1})^P}$$

where
N=said number of volumes
Vr=the volume ratio corresponding to the index n
n=1, . . . N−1
Vro<8=largest volume ratio

$$K = \text{constant} < \left(1 - \frac{1}{N-1}\right)^{-P}$$

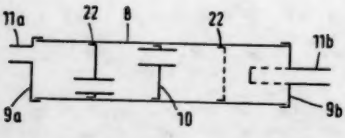
P=parameter>0.76.

4,382,487

EXHAUST MUFFLER OF ENAMELLED STEEL SHEET METAL AND METHOD OF PRODUCING IT

Werner Baumann, Jahnstrasse 2, D-8450 Amberg, Fed. Rep. of Germany

PCT No. PCT/DE80/00055, § 371 Date Dec. 30, 1980, § 102(e) Date Dec. 29, 1980, PCT Pub. No. WO80/02439, PCT Pub. Date Nov. 13, 1980
PCT Filed Apr. 25, 1980, Ser. No. 229,597
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917586
Int. Cl.³ F01N 7/16, 7/18
U.S. Cl. 181—282 4 Claims



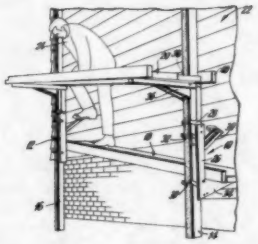
1. An exhaust muffler of enamelled steel sheet, providing a sheath and having two ends which are closed by head pieces, and containing intermediate sound absorbing elements, structural parts of the muffler being attached to the wall of the sheath by means of slick enamel through fusing the enamel on the wall, characterized in that:
(a) the sound absorbing elements are structural parts attached to the sheath by fusing of the enamel,
(b) the sound absorbing elements are intermediate walls pre-enamelled and having at their periphery edges with connecting surfaces bent over parallel to the inner wall of the sheath,
(c) the intermediate walls are covered with an enamel finish-reacted in a subsequent firing step,
and
(d) the inner wall of the sheath is also pre-enamelled and covered with an enamel finish-reacted in a subsequent firing step.

4,382,488

PUMP JACK POLES

Carl Anderson, 2581 Richmond Ter., Staten Island, N.Y. 10303

Filed Apr. 24, 1980, Ser. No. 143,506
Int. Cl.³ E04G 1/20
U.S. Cl. 182—136 21 Claims



1. A pump jack comprising an elongated metal tubing having a rectangular cross sectional configuration, and a rubberized surface formed on only one side of the tubing, said pole comprising two pole sections, a splint means for interconnecting said two sections at abutting ends thereof, said rubberized surface being longitudinally offset with respect to the pole sections so as to extend a predetermined distance past one end thereof and to expose a corresponding distance of the pole at the other end thereof, and wherein the interconnected ends have the extended rubberized surface of one pole section covering the exposed portion of the adjacent pole section such that the rubberized surfaces abut at a location spaced from the abutting ends of the pole sections.

4,382,489

APPARATUS FOR OPERATING DURING EARTHQUAKE

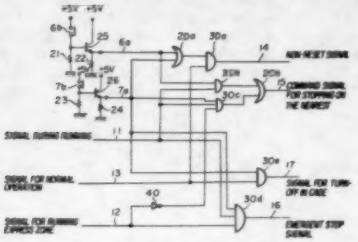
Katsuhiko Suzuki, and Shinobu Tajima, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,470, Jan. 29, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,237
Claims priority, application Japan, Feb. 8, 1979, 54-13639
Int. Cl.³ B66B 13/24
U.S. Cl. 187—29 R 1 Claim

1. In an apparatus for operating an elevator system during an earthquake which comprises a vertical vibration sensor which is actuated by a specific vibration and a horizontal vibration sensor which is actuated by vibration greater than the vibration for said vertical sensor and including a first control device which performs a preliminary operation on an elevator cage and a second control device which is actuated by the operation of said horizontal sensor to perform the operation for earthquake detection including the stopping of said elevator cage,

wherein said elevator system has an output means to indicate the normal operation of said system and the express operation of said system to detect whether said elevator stops at each specified level or whether said elevator is operating in an express zone, the improvement comprising:

a logic means responsive to said first and second control devices and said elevator system output means to provide



a control stoppage of said elevator cage dependent upon the condition of said first and second control devices and said operating signals from said elevator system whereby when said output means indicates the normal operation of said system said elevator cage is stopped at the next floor and when said output means indicates the express operation of said system said elevator cage is immediately stopped without regard to its location.

4,382,490

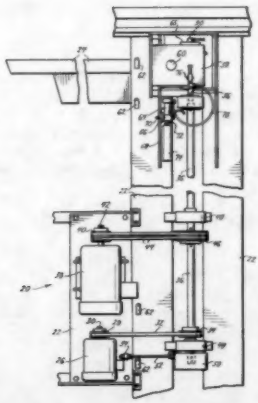
DRIVE TRAIN APPARATUS

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Inc., Fenton, Mo.

Continuation-in-part of Ser. No. 950,280, Oct. 11, 1978. This application Sep. 17, 1979, Ser. No. 76,479

Int. Cl.³ B66B *1/00*

U.S. Cl. 187—32 **10 Claims**



1. In a materials handling device having an element driven by a rotating shaft from a first position to a second position, the improvement comprising a first motor operatively coupled to the rotating shaft, a second motor operatively coupled to the rotating shaft, said first motor having means to drive said rotating shaft substantially faster than said second motor, means to sense when the element reaches a preselected distance from said second position, means to sense when the element reaches the second position, a brake mounted to the rotating shaft, and means to control said motors and brake so that the first motor drives a rotating shaft until the element reaches the preselected distance, the second motor drives a rotating shaft from the preselected distance to the second position, and the brake stops the rotating shaft when the element reaches the preselected distance, wherein an oil lubricated gear box having a level of oil and having bearings is driven by said rotating shaft and further comprising an automatic bearing oiler for said gear box including a cylinder, a supply line tapped into the gear box below the oil level and extending to said cylinder, a lube line extending from the cylinder to at least one bearing, and means to repeatedly operate said cylinder to deliver oil to the bearing.

4,382,491

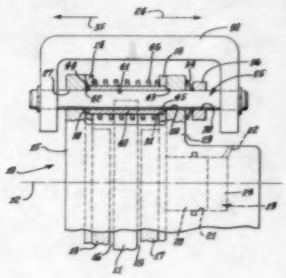
DRAG FREE DISC BRAKE ASSEMBLY HAVING AUTOMATICALLY ADJUSTING CALIPER

Victor L. Chun, Holland, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.

Filed Aug. 11, 1980, Ser. No. 177,219

Int. Cl.³ F16D *65/54*

U.S. Cl. 188—71.8 **8 Claims**



1. A disc brake assembly comprising

a fixed shaft, which defines an axis,

a disc, which is rotatable about an axis parallel to the axis of the shaft, and which has opposite first and second faces,

a first braking pad, which is movable axially along the shaft into and out of frictional engagement with the first face of the disc,

a second braking pad, which is movable axially along the shaft into and out of frictional engagement with the second face of the disc,

hydraulic means, which comprises a cylinder movable axially along the shaft and a piston movable axially in the cylinder, which moves the first braking pad a sufficient distance axially, regardless of the amount of wear on the first braking pad, to effect frictional engagement with the first face of the disc upon application of hydraulic pressure to the piston, and which allows the first braking pad to move axially out of frictional engagement with the first face of the disc upon release of hydraulic pressure from the piston,

a caliper, which straddles the respective braking pads and the disc, and which is movable axially along the shaft, together with the cylinder, so as to move the second braking pad axially into frictional engagement with the second face of the disc in reaction to application of hydraulic pressure to the piston, and so as to allow the second braking pad to move axially out of frictional engagement with the second face of the disc upon release of hydraulic pressure from the piston,

a first biasing means, which biases the respective braking pads so as to oppose axial movement of the respective braking pads into frictional engagement with the respective faces of the disc upon application of hydraulic pressure to the piston, and so as to cause axial movement of the respective braking pads out of frictional engagement with

the respective faces of the disc upon release of hydraulic pressure from the piston,

a drag part, which grips the shaft frictionally,

a limiting means, which cooperates with the drag part so as to limit retraction of the caliper to a fixed distance, and

a second biasing means, which allows the caliper to move the second braking pad axially into frictional engagement with the second face of the disc in reaction to application of hydraulic pressure to the piston, whereby the second biasing means is energized, and which retracts the caliper upon release of hydraulic pressure from the piston,

wherein the drag part is able to move axially along the shaft, if the force being transmitted by the caliper to the drag part through the second biasing means upon application of hydraulic pressure to the piston exceeds the force required to energize the second biasing means, so as to compensate for wear of the second braking pad.

4,382,492

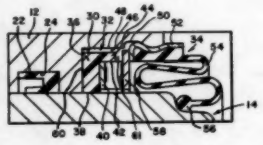
DISC BRAKE HAVING A PISTON RETRACTION ASSEMBLY

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 27, 1981, Ser. No. 248,650

Int. Cl.³ F16D *65/54*

U.S. Cl. 188—71.8 **2 Claims**



1. In a disc brake having a piston retraction assembly, a caliper defining a bore for receiving a piston to substantially form a pressure chamber, the pressure chamber receiving pressurized fluid during braking to move the piston relative to the caliper, the retraction assembly cooperating with the caliper and the piston to substantially control withdrawal for the piston relative to the caliper upon termination of braking and a boot assembly cooperating with the caliper and the piston to isolate a sliding interface therebetween from the environment, characterized by said caliper bore including a recess at the open end, said retraction assembly comprising a friction ring engaging said piston and a resilient member biasing said friction ring to a first position engaging said caliper, said friction ring and said resilient member being disposed within said recess and said boot assembly including a portion extending into said recess to engage said resilient member, said friction ring being movable to a second position in response to movement of said piston to also engage said boot assembly portion whereby said boot assembly portion limits movement for said friction ring, and said friction ring being substantially L-shaped in cross section with an axially extending leg forming a radial clearance with an axially extending wall of said recess.

4,382,493

DISC BRAKE ASSEMBLY

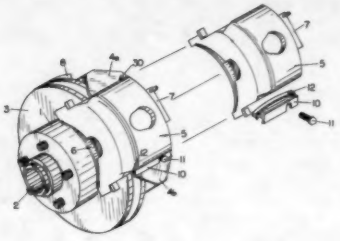
Robert W. La Warre, Sr., P.O. Box 35, Lima, Ohio 45802

Filed Oct. 7, 1980, Ser. No. 194,855

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.43 **20 Claims**

1. In a disc brake assembly for wheeled motor vehicles including: a vertically disposed rotatable disc; a caliper disposed about the disc so that braking surfaces were provided next to opposite vertical sides of the disc; an anchor frame for securing the said disposition of the caliper; a keyway defined by sliding surfaces on the caliper, a caliper recess and an adjacent surface of the anchor frame; an iron key disposed in the keyway and fixedly attached to the anchor frame, said key having surfaces for providing lateral sliding movement between the caliper sliding surfaces and the key sliding surfaces and for providing a positive lock against substantial vertical displacement of the caliper from the key; and an iron caliper support spring disposed between the key and a surface of the caliper recess for resiliently and slideably supporting the caliper sliding surfaces on the key sliding surfaces, said support spring being of a configuration such that when disposed within the said keyway that a high vertical force on the caliper is required for the caliper to fully compressing the spring; whereby an effective sliding friction between the caliper sliding surfaces and the key sliding surfaces results from the configurations of the keyway, key and support spring;



the improvement wherein the said key has a sliding surface hardness of at least 62 on the Rockwell C scale and one or more of the keyway, key and support spring are so configured such that the said full compression force of the spring is at least 6 g's and less than 10 g's and the effective sliding friction between the caliper sliding surfaces and the key sliding surfaces is decreased,

whereby, the accumulation of galling or binding rust between the key sliding surfaces, the caliper sliding surfaces or the support spring is reduced and the caliper is more freely slideable on the key.

4,382,494

ADJUSTER STRUT FOR VEHICLE DRUM BRAKE

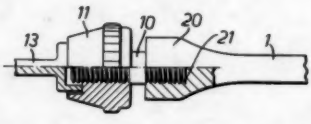
Dietrich Holz, Lahnstein, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 16, 1980, Ser. No. 216,847

Claims priority, application United Kingdom, Dec. 20, 1980, 7943831

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—79.5 P **2 Claims**



1. In a vehicle wheel drum brake having a pair of shoes, a hydraulic actuating cylinder operable on adjacent ends of said shoes and a wheel hub in relatively closely spaced adjacency to said actuator, the improvement comprising an adjuster strut comprised of a generally flat element extending over the major portion of the length of the strut and located between said wheel hub and said actuating cylinder, said element abutting one of said shoes and having an enlarged end portion remote from said one shoe, said enlarged end portion being at all times wholly disposed to the side of the axis of said hub as the other of said shoes, an abutment member abutting said other of said shoes, a ratchet wheel having an axial recess therein for rotat-

ably receiving a projection on said abutment member whereby said ratchet wheel surrounds and abuttingly engages portions of said abutment member, a pawl pivotally mounted on said other of said shoes and arranged to rotate said wheel in the event of excess shoe travel, and a screw threaded rod having a non-rotatable screw threaded connection with the enlarged end portion of said flat element and a rotatable screw threaded connection with said ratchet wheel whereby rotation of said wheel along said rod and against said abutment member in response to excess shoe wear increases the strut length.

4,382,495

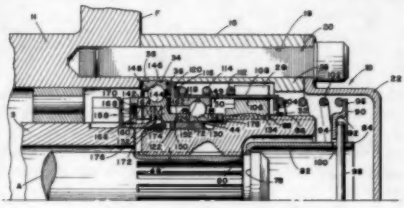
FOUR-WHEEL DRIVE CLUTCH

Arthur M. Fleitas, Loveland, Colo., assignor to Dualmatic Manufacturing Company, Longmont, Colo.

Continuation-in-part of Ser. No. 180,699, Aug. 25, 1980, Pat. No. 4,369,868. This application Jan. 22, 1981, Ser. No. 227,364

Int. Cl.³ F16D *11/00*; B60K *17/34*

U.S. Cl. 192—36 **10 Claims**



1. A selective drive clutch for automatically connecting a driven element to a drive element for conjoint coaxial rotation and for automatically disconnecting same when said drive element is not being driven, comprising: a first interlocking member mountable upon the driven member for rotational movement therewith; a second interlocking member mountable upon the drive element for rotational movement therewith and for axial movement relative thereto between retracted and extended positions; means carried by opposed end portions of said first and second interlocking members effective upon extension of the latter to interengage and effect a driving connection therebetween; first biasing means operatively associated with said second interlocking member normally biasing same into retracted position; and actuating means responsive to limited relative rotational movement between said drive and driven elements for effecting an axial shift of said second interlocking member between its extended and retracted positions, said means including inner and outer grooved cam rings, at least two equiangularly-spaced cam followers in the form of balls seated in the grooves and interconnecting the cam rings for limited relative axial and rotational movement in coaxial circumferentially-spaced relation, and braking means having a fixed friction surface engaging said inner cam ring effective to yieldably retard rotation thereof, the outer of said cam rings being movable both axially and rotarially with said second interlocking member on the end thereof remote from said first interlocking member, the grooves in said cam rings comprising an opposed pair of generally V-shaped tracks for each ball facing opposite one another in axially-divergent overlapped relation, said paired ball tracks when interconnected by a ball in side-by-side relation being responsive to rotational movement of the drive element in either direction while the inner cam ring is yieldably restrained against rotation to move said tracks into an overlapped end-to-end relation operative to move the outer cam ring axially from a retracted into an extended position thereby extending the second interlocking member associated therewith into interengaged driving relation with the first interlocking member, and said balls when seated within the overlapped ends of said paired tracks cooperating therewith to overcome the braking action of the braking means yieldably retarding rotation of said inner cam ring while defining a driving connection between the latter and said outer cam ring causing them to rotate as a unit upon continued rotation of said drive element in the same direction, said ball tracks and ball also cooperating in response to reversal of said drive element while the first and second interlocking elements remain interlocked and with said tracks disposed in end-to-end relation to momentarily retract and extend said outer cam ring as well as rotate same relative to said inner cam ring while the latter is restrained against rotational movement thereby placing the opposite ends of the tracks carried thereby into an overlapped end-to-end relation effective to maintain the driving connection between the first and second interlocking members throughout reversal of the drive element, and said ball and overlapped opposite track ends again cooperating upon continued rotation of said drive element in reverse to overcome the braking action of the braking means yieldably retarding rotation of said inner cam ring while defining a driving connection between the latter and said outer cam ring effective to rotate them as a unit, and said ball tracks and ball further cooperating with one another and with the first biasing means in response to deactivation of said drive means into a free-wheeling condition and rotation of said driven element relative thereto in a direction opposite to that in which said driven element was last driven while said inner cam ring remains restrained against rotation and said tracks are disposed in end-to-end relation to rotate said interlocked first and second interlocking members along with said outer cam ring as a unit to return the paired ball tracks into side-by-side relation thereby retracting said outer cam ring and associated second interlocking member so as to disengage under the influence of the bias exerted thereon by said first biasing means.

4,382,496

TORQUE CONVERTER WITH LOCKUP CLUTCH UNIT

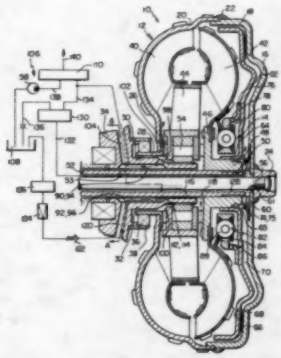
Takahiro Yamamori, Tokyo; Kazuyoshi Iwanaga, and Kunio Ohtsuka, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 957,610, Nov. 3, 1978. This application Jan. 2, 1981, Ser. No. 222,151

Claims priority, application Japan, Sep. 13, 1978, 53-112645

Int. Cl.³ F16D *33/00*

U.S. Cl. 192—3.29 **11 Claims**



1. A hydrokinetic torque converter assembly of the lockup clutch unit-equipped type comprising:

a rotatable converter cover, an impeller drivingly connected to said converter cover, a turbine and a stator operatively associated with said impeller to define a converter working circuit, a pump drive shaft drivingly connected to said converter cover, a stationary sleeve shaft extension carrying thereon said stator and concentrically disposed about said pump drive shaft, an aperture free hollow transmission input shaft drivingly connected to said turbine and

concentrically disposed between said pump drive shaft and said stationary sleeve shaft extension, a pilot sleeve shaft integrally connected to said converter cover and rotatably carried by said stationary sleeve shaft extension, said pilot sleeve shaft being concentrically disposed about said stationary sleeve shaft extension, a lockup clutch unit including a clutch piston which is cooperative with said converter cover to define therebetween a clutch chamber, said clutch piston being drivingly connected to said turbine and movable toward and away from said converter cover to engage and disengage said converter cover in response to the fluid pressure in said clutch chamber;

means defining a lockup control fluid passage between said pump drive shaft and said transmission input shaft, said lockup control fluid passage communicating with said clutch chamber;

means defining a first converter fluid passage located between said transmission input shaft and said pilot sleeve, said first converter fluid passage communicating with said converter working circuit; and

means defining a second converter fluid passage between said transmission input shaft and said stationary sleeve shaft extension, said second converter fluid passage communicating with said converter working circuit.

4,382,497

DEVICE FOR COOLING A FRICTIONAL CLUTCH FOR AN AUTOMOBILE

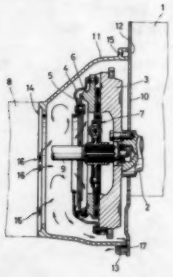
Ichio Sakai, and Hisao Otani, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 5, 1981, Ser. No. 240,942

Claims priority, application Japan, Mar. 13, 1980, 55-34195[U]

Int. Cl.³ F16D *13/72*

U.S. Cl. 192—113 A **4 Claims**



1. In combination with a clutch housing of a frictional clutch for an automobile provided between an end plate of a cylinder block and a transmission case, a device for cooling said frictional clutch comprising passages respectively formed in surfaces of said clutch housing contacting said end plate and said transmission case for introducing and discharging cooling air into and from said clutch housing, each of said passages having an opening toward the interior of said clutch housing and another opening toward the exterior of said clutch housing, said openings being deviated from each other with respect to the circumferential direction of said clutch housing.

4,382,498

SILAGE HANDLING SYSTEM

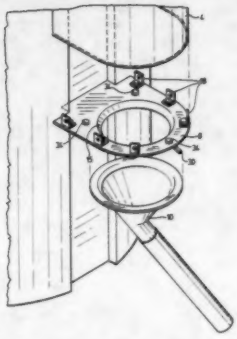
Kenneth P. Glendinning, R.R. #2, Lucan, Ontario, Canada (N0M 2J0)

Filed Dec. 21, 1981, Ser. No. 332,467

Int. Cl.³ B65G *11/16*

U.S. Cl. 193—34 **22 Claims**

1. In a silage unloading system having a discharge chute including an inlet means and a discharge, a silage hopper comprising a first member for securement to the discharge of such discharge chute and having an opening through which silage can pass, and a second member, defining a silage-converging through passage, releasably secured beneath said first member and cooperating therewith to converge silage passing through



the opening in said first member, whereby silage unloaded into such discharge chute is controlled and directed by said first member and said second member to a point of discharge from said second member, removal of said second member allowing access to such discharge chute through the opening in said first member.

4,382,499

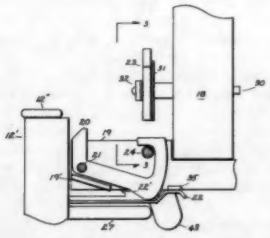
TOTALIZER APPLICATION FOR NEWSPAPER VENDING MACHINE

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29301

Filed Jan. 19, 1981, Ser. No. 226,018

Int. Cl.³ G07F *5/08*

U.S. Cl. 194—1 L **6 Claims**



1. A novel door release means for a newspaper vendor of the type which includes a door which must be opened to gain access to the newspapers comprising:

(a) a spring biased latch including a catch engaging member;

(b) a catch which when engaged by said latch prevents opening of said door;

(c) a moveable element so positioned as to selectively permit or prevent said latch from following a path of engagement with said catch;

(d) a latch depressing means to restrain said catch engaging member in a plane of non-engagement with said catch as said door starts to open; and

(e) a coin mechanism including a price cam, said price cam being moveable from a position of nonrestraint to a position of restraint relative to said moveable element responsive to the insertion of money into said coin mechanism; said moveable element being so positioned in relation to

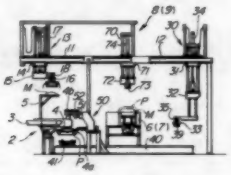
said latch that said catch engaging member is permitted to move from said plane of non-engagement with said catch to engage said catch as said door starts to open when a predetermined amount of money has not been inserted or, restrain said catch engaging member in said plane of non-engagement with said catch as said door starts to open when a predetermined amount of money has been inserted in said coin mechanism.

4,382,500

CONVEYOR SYSTEM FOR CONVEYING PANELS AND SHADOW MASKS

Tadao Oyama, and Takashi Ohta, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,264
Claims priority, application Japan, Jun. 11, 1980, 55-77764
Int. Cl.³ B65G 47/00
U.S. Cl. 198—346 **11 Claims**



1. A conveyor system for conveying panels and shadow masks between a processing apparatus of the type having at least a table and a carrier head arranged in pair adapted to be moved along a predetermined path, said table being accessible from the upper side while said carrier head is accessible from the lower side, and a shadow mask demounting or mounting apparatus disposed adjacent to said processing apparatus, said conveyor system comprising:

a mask conveyor means for conveying a shadow mask between the table positioned at a first predetermined position and a second predetermined position on said shadow mask mounting or demounting apparatus;

a first panel conveyor means for conveying said panel between said carrier head positioned at a third predetermined position and a fourth predetermined position spaced from said third predetermined position; and

a second panel conveyor means for conveying said panel between said fourth predetermined position and a fifth predetermined position on said shadow mask demounting or mounting apparatus.

4,382,501

EGG ORIENTATION MEANS

Thomas O. Niederer, and Lee H. Niederer, both of Titusville, N.J., assignors to Otto Niederer Sons, Inc., Pennington, N.J.

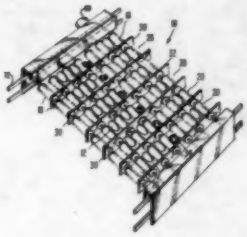
Filed Oct. 24, 1980, Ser. No. 200,308
Int. Cl.³ B65G 47/24
U.S. Cl. 198—384 **10 Claims**

1. An egg orientation means, for receiving eggs adapted to orient the pointed ends of the eggs as desired, which comprises:

(a) an egg conveyor means for transporting eggs longitudinally therealong, with the major axis thereof extending laterally and horizontally with respect to said egg conveyor means, said conveyor means including a plurality of laterally extending egg support means adapted to move longitudinally with said egg conveyor means, each said egg support means being selectively rotatable along the laterally extending axis thereof, said egg support means defining at least one egg receiving recess therebetween including an open bottom area therein defined by said laterally extending egg support means being arranged in at least one longitudinally extending row;

(b) a plurality of divider means extending longitudinally along and above said egg conveyor means between said longitudinally extending rows of egg receiving recesses to facilitate retaining of eggs therein; and

(c) an egg inverter means extending laterally under said egg conveyor means and adapted to selectively extend upwardly through said open bottom area into said egg receiving recesses to contact and invert an egg along the major axis thereof to orient the point thereof to extend in the direction opposite to its direction prior to inversion and with the major axis thereof remaining in a lateral and horizontal orientation with respect to said egg conveyor means, said egg inverter means including:



(1) an abutment means movably positioned to extend upward into said egg receiving recess through said open bottom area thereof into contact with the bottom of the shell of an egg located therein, said abutment means being movable laterally with respect thereto to exert a force upon the shell of the eggs to urge the eggs, upon contact with the pointed end thereof with the adjacent divider means, to invert along the major axis thereof with the pointed end in the opposite orientation than previously; and

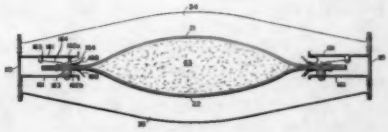
(2) a friction surface along the portion of said abutment means which directly contacts the shell of the egg to be inverted, said friction surface having a pre-defined coefficient of friction to control the magnitude of force being exerted upon the shell of the egg to be inverted.

4,382,502

ELEVATOR-CONVEYOR FOR BULK MATERIAL

Isaac Beresinsky, Haifa, Israel, assignor to Moledeth Development Company Ltd., Israel

Continuation-in-part of Ser. No. 806,962, Jun. 15, 1977, Pat. No. 4,230,221. This application Sep. 3, 1980, Ser. No. 183,808
Claims priority, application Ireland, May 31, 1977, 1118/77
Int. Cl.³ B65G 15/14, 15/60
U.S. Cl. 198—628 **12 Claims**



12. In or for use an elevator-conveyor for conveying bulk material over a predetermined path, at least a portion of which path is in a vertical or near vertical direction and comprising a pair of juxtaposed belts between which the bulk material is to be located and air pressure means adapted to act directly on one or both of the outer belt surfaces when the belts are in the vertical or near vertical direction so that the belts are pressed towards one another and against the interposed bulk material

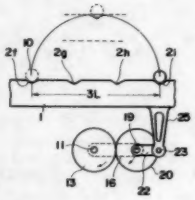
so as to enclose the same and so that the juxtaposed longitudinal side portions of the belts are pressed towards each other, a belt formed of elastic, resiliently flexible, air impermeable, material, longitudinal side portions of said belt being provided with reinforcing plies so as to impart the required strength to the side portions and an increased rigidity of said side portion vis-a-vis a longitudinal median portion, said belt having on a surface thereof and, adjacent each longitudinal edge, at least one projecting rib, which is directed at an acute angle with respect to said outer surface, and resilient filler material being bonded between said rib and said surface.

4,382,503

WALKING BEAM

Shinji Akita, Yokohama, and Minoru Morita, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,253
Claims priority, application Japan, Aug. 29, 1980, 55-118434
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774 **3 Claims**



1. In a walking beam wherein a material to be transferred is placed on a plurality of stationary beams and the material is transferred by repeating a process of raising the material from below, moving the material forward and placing the material again on the stationary beams by a plurality of transfer beams adapted to make a circular motion in response to the rotation of driving rotating shaft means, the improvement wherein each of said transfer beams is provided with a plurality of driving means responsive to the rotation of said driving rotating shaft means to cause said transfer beam to make a circular motion, each of said driving means comprising:

a first link having one end thereof connected to said transfer beam to cause said circular motion of said transfer beam and other end thereof mounted on a supporting shaft to rotate about the same;

a second link mounted on a main rotating shaft to rotate about the same and having a radius of rotation two times that of said first link, the other end of said supporting shaft being fitted in a forward end of said second link;

a first gear mounted on said supporting shaft to rotate together with said first link; and

a second gear mounted on said main rotating shaft and in mesh with said first gear,

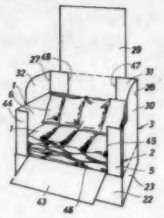
whereby varying a feed length of said material at a ratio of 1:1, 1:2 and 1:3, respectively, in response to a first operating condition where said second link is locked and only said first link is rotated about said supporting shaft by said second gear through said first gear, a second operating condition where said first gear is prevented from rotating on its own axis but is moved about said main rotating shaft by said second link, and a third operating condition where said second link is rotated about said main rotating shaft and said first link is rotated about said supporting shaft in a direction opposite to the direction of rotation of said second link once for every rotation of said second link.

4,382,504

TRANSPORT AND DISPLAY CONTAINER

Steen Vesborg, Copenhagen, Denmark, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,362
Claims priority, application Denmark, Jul. 17, 1980, 3084/80
Int. Cl.³ B65D *5/52*
U.S. Cl. 206—44 R **4 Claims**



1. A transport and display container adapted to receive plurality of objects, and which is formed by a foldable sheet material and adapted to be supported in its transport and display position by the carrying surface of a pallet, said container comprising

a sleeve-like, rectangular lower part forming a front wall, a rear wall, and two side walls in the container, and which is provided with four bottom flaps extending inwards into the container from the lower edge on said front wall, said rear wall, and two side walls, respectively, and which in the transport and display position of the container abut the carrying surface of a pallet,

a plane bottom plate, the size of which corresponds to the interior cross-sectional dimensions of said lower part, and which is positioned on top of said four bottom flaps within said lower part, and

a rectangular upper part comprising a front wall, a rear wall, and two side walls, and a top wall assembly, and which in the transport position of the container forms a lid positioned on top of and on the outside of said lower part characterized in that said top wall assembly is formed by a front flap connected to the upper edge of said front wall of said upper part, two side flaps connected to the upper edges of said side walls of said upper part, and a rear flap connected to the upper edge of said rear wall of said upper part and which is formed along its two side edges integral with said two side flaps, said two side flaps each containing an oblique folding line extending from the point of intersection between the upper edges of said rear wall and said side wall, respectively, of said upper part, and which forms an angle of 45° with the upper part of said side wall, said four flaps of the top wall assembly in the transport position of the container being positioned on top of each other to form a top wall in said upper part.

4,382,505

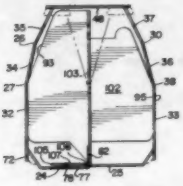
WRAP AROUND CARRIER FOR RETURNABLE BOTTLES

Robert L. Sutherland, Campbell Hall, N.Y., and George S. Holmes, Waldwick, N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Feb. 20, 1981, Ser. No. 236,264
Int. Cl.³ B65D *75/00, 75/06, 75/56, 85/62*
U.S. Cl. 206—180 **11 Claims**

1. A carton for packaging an assembly of articles in the form of bottles arranged in double row, transversely aligned pairs, said carton being in the form of a tube of foldable sheet material with connected wall-forming panels which are adapted to be disposed about the top, sides and bottom of the articles when the assembly of articles is enclosed in the carton, said carton having means for restraining the articles against move-

ment out of the ends of the carton, the top wall forming panels of said carton having tear lines defining a tear out portion of sufficient size to enable the articles to be readily removed through the resulting opening while retaining the tubular configuration of the carton and permitting return therein of articles of like form, the carton bottom wall comprising a pair of marginally overlapped panels which are secured by cooperating interengaging locking elements, and a separate insertable partition member adapted to be positioned between the two rows of articles which has means at the bottom for interlocking with the overlapped marginal portions of said bottom wall forming panels and a handle forming means adjacent the top which is accessible through the opening resulting from tearing out said portion of said top wall forming panel.



4,382,506

MULTI UNIT PACKAGE INCORPORATING WRAP-AROUND HANDLE

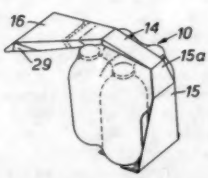
Jean Chaussadas, Deols, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 9, 1981, Ser. No. 241,863

Claims priority, application United Kingdom, Mar. 12, 1980, 8008282; Jan. 28, 1981, 8102591

Int. Cl.³ B65D *75/00, 65/00*

U.S. Cl. 206—200 **10 Claims**



1. A package comprising a group of primary containers such as bottles or cans, connecting means of plastics film material for holding said containers clustered together to form a unit, an outer sleeve of paperboard surrounding said clustered unit and providing handle means by which the package can be carried, said outer sleeve comprising a top wall extending across the top of said package adjacent the tops of said primary containers, side walls joined to opposite ends of said top wall, and a bottom wall joined to said side walls remote from said top wall and underlying the bases of at least some of said primary containers, characterized in that said top wall comprises a central portion and integrally hinged opposed marginal portions, said marginal portions being folded into overlapping relationship with respect to said central portions to form a multi-ply handle.

4,382,507

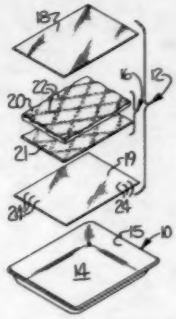
ABSORBENT PAD

Alan H. Miller, Hickory, N.C., assignor to Cella Products Company, Patterson, N.C.

Division of Ser. No. 96,797, Nov. 23, 1979, Pat. No. 4,275,811, which is a continuation-in-part of Ser. No. 69,074, Aug. 23, 1979, abandoned, which is a continuation of Ser. No. 885,622, Mar. 13, 1978, abandoned. This application Apr. 1, 1981, Ser. No. 249,941

Int. Cl.³ B65D *81/26, 81/22*

U.S. Cl. 206—204 **6 Claims**



1. An absorbent pad useful in a food package to separate and maintain the exuded liquids from the food product to thereby minimize contamination of the food product, or as a device for moisturizing a closed food container or package, and comprising

a mat of liquid absorbent material comprising a layer of paper wadding and a layer of wood fluff, said layers of paper wadding and wood fluff being mechanically interconnected to maintain the relative positioning thereof and the integrity of the wood fluff,

a first sheet of liquid impermeable plastic material overlying and covering one side of said mat of liquid absorbent material, and

a second sheet of plastic material overlying and covering the other side of said mat of liquid absorbent material, the peripheral edges of said first and second sheets being sealed together to enclose said mat therebetween, and with said second sheet only having a plurality of openings spaced over substantially the full area thereof and which permit passage of a liquid into said mat so as to be retained thereby, and wherein a layer of paper wadding is positioned immediately adjacent said second sheet, whereby said paper wadding acts to prevent dust from said wood fluff from passing outwardly through said openings.

4,382,508

PACKAGING AND ENVIRONMENTAL TREATMENT CONTAINER SYSTEM

Roberta Robbins, Sherman Oaks, and William E. Henson, North Hollywood, both of Calif., assignors to American Western Industries, Inc., North Hollywood, Calif.

Filed Feb. 23, 1981, Ser. No. 236,931

Int. Cl.³ B65D *69/00, 85/67, 21/02*

U.S. Cl. 206—216 **6 Claims**

1. A combined point-of-sale, and atmospheric environmental control storage package and assembly for a golf glove, comprising:

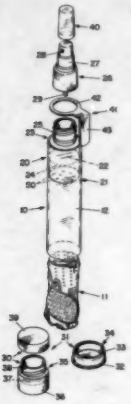
a thin, semi-rigid, bendable, cylindrical, transparent plastic tube several inches in length, for enclosing the golf glove and retaining a preservative and conditioning atmosphere around the glove;

a cylindrical spray container for glove conditioning and

preserving fluid, fitting within said tube to form an upper airtight closure for said tube, said container extending into said tube for less than one-third of the length of said tube;

spray fluid means for conditioning and preserving gloves, in said spray container;

said spray container making a tight fit within one end of said tube, with the outer diameter of said spray container closely fitting the inner diameter of said tube;



means for hermetically sealing said spray container to said tube;

an airtight lower closure for said plastic tube; and

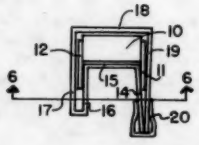
a golf glove enclosed within said tube between said spray container and said airtight closure.

4,382,509

METHOD AND APPARATUS FOR ASSEMBLING, SHIPPING AND TESTING SENSITIVE ELECTRONIC COMPONENTS

Bertram I. Gordon, Baltimore, Md., assignor to L. Gordon & Sons, Inc., Baltimore, Md.

Filed Sep. 2, 1980, Ser. No. 182,883
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—331 **11 Claims**



1. An electrical component of the type that has spaced sets of electrical connectors projecting therefrom and means for holding said component to prevent injury thereof, comprising.

a bent piece of backing material having two surfaces of said material spaced apart about the same distance as the spacing between said sets of electrical connectors,

said component being mounted on said backing material with said connectors in contact with said surfaces.

said bent piece of backing material having conductive material located thereon such that said conductive material substantially eliminates build up of static electricity,

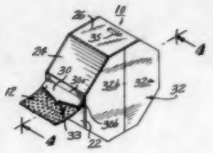
said bends of said bent piece of backing material being so resilient and biasing wherein when said surfaces being pressed toward each other, the contact between said connectors and said surfaces being disconnected by insertion of a non-conductive material therebetween.

4,382,510

ROLL DISPENSING CONTAINER

William Gaffney, New York, N.Y., assignor to Gafcel Industries, Inc., Bronx, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,836
Int. Cl.³ B65D *85/67, 85/671, 5/72*
U.S. Cl. 206—396 **5 Claims**



1. A one-piece container for dispensing an elongated web composed of plural thermoplastic laminae mutually defining a multiplicity of gas-filled bubbles, said web being coiled about an axis transverse to its length to form a central cylindrical void,

said container comprising a receptacle including:

(A) a ring of at least eight equi-dimensional retangular corrugated-board segments successively joined to one another to form a peripheral side,

(B) two equi-dimensioned polygonal corrugated-board segments,

(i) each polygonal segment having as many sides as there are rectangular segments,

(ii) each polygonal segment being plane,

(iii) the two polygonal segments being parallel to each other,

(iv) the two polygonal segments being perpendicular to the rectangular segments,

(v) each of the two polygonal segments being formed of two equal half-segments,

(vi) each polygonal half-segment being joined by an integral hinge to a different rectangular segment so as to permit the two associated half-segments of a given polygonal segment to be folded to form a single polygonal segment which lies at the edges of one set of edges of the ring of rectangular segments,

(C) some of the edges of the rectangular segments to which the polygonal half-segments are not hinged having hinged thereto six-sided segments of a shape resembling the polygonal half-segments but narrower than the same,

(i) all of the narrower six-sided segments and the polygonal half-segments of the container being in-folded to extend over the otherwise-open sides of the ring,

(D) each of the narrower six-sided segments and each of the polygonal six-sided half-segments having a free edge remote from the hinged edge thereof,

(E) means providing tabs at the centers of the free edges of the narrower six-sided segments and the polygonal half-segments,

(i) all of said tabs being hinged to their associated segments,

(ii) all of said tabs being in-folded to extend into the container and being interlocked so as to be interengaged and thereby form registered trunnions that extend from the inner faces of the parallel plane polygonal segments toward the interior of the container and into the generally cylindrical void,

(F) said trunnions rotatably supporting the coiled web in the container for rolling dispensal thereof,

(G) said container further including a slot formed in one of said rectangular segments which is dimensioned and shaped to permit the web to be pulled therethrough by a user.

4,382,511
PACKAGE WITH SURROUNDING BINDER

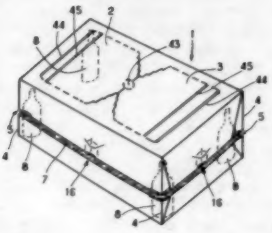
Benoit Hamelin, Schiltigheim, and Brigitte Constant, Selestat, both of France, assignors to Brasseries Kronenbourg S.A., Kronenbourg, France

Continuation of Ser. No. 70,928, Aug. 30, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,633

Claims priority, application France, Sep. 1, 1978, 78 25707; Aug. 1, 1979, 79 00692

Int. Cl.³ B65D *5/66, 71/04, 85/62*

U.S. Cl. 206—427 12 Claims



1. A package for containers and the like having a parallelepiped shape with side and end walls and a planar top surface, at least one reclosable nonoverlapping flap formed from said planar top surface and forming a substantial portion thereof, said flap being foldable outwardly from said surface to provide access to the interior of the package and being returnable to a retained closed position with the flap coplanar with said top surface, said flap being delineated by a pair of lateral pre-cut edges on said top surface spaced inwardly from said side walls and extending therealong together with a tapered pre-cut end edge and an end fold line on the opposite end of said lateral pre-cut edges from said pre-cut end edge, said end fold line being on said planar top surface spaced from and parallel to an adjacent end wall of the package, said flap being further provided with a second fold line between said pre-cut end edge and said end fold line, said second fold line being parallel to said end fold line and spaced therefrom by a distance only slightly greater than the distance between the end fold line and the adjacent end wall of the package whereby the flap may be folded outwardly along both fold lines for positioning a portion thereof in planar abutting contact with said end wall, said flap including a tongue formed within the flap adjacent said pre-cut end edge for retention of the flap in its closed position, said tongue being coplanar with the flap and being cut out of the surface of the flap and having a fold line spaced from said pre-cut end edge by a distance less than the length of the tongue whereby the tongue can be folded outwardly from the flap along the fold line for positioning in overlying relationship with the flap across the pre-cut end edge for retention of the flap in its reclosed position coplanar with said top surface.

4,382,512
CONTAINER SYSTEM FOR DANGEROUS MATERIALS

Ronald J. Furminger, Amersham, England, assignor to The Radiochemical Centre Ltd., Amersham, England

Filed Feb. 25, 1980, Ser. No. 124,240

Claims priority, application United Kingdom, Aug. 6, 1979, 7927387

Int. Cl.³ B65D *85/84;* G21F *5/00*

U.S. Cl. 206—446 10 Claims

1. A container system comprising:

a container having a body and a removable lid, said body having an externally threaded end, said lid having first and second opposing lid ends, said first lid end having internal threads for allowing said first lid one end to threadably engage said container externally threaded end thereby closing said container;

a vial adapted to fit within said container and having a vessel and a removable top releasably fitted to said vessel;

said second lid end having a first engaging means for, when said lid is removed from said container, engaging the outer periphery of said removable top for releasing said removable top from said vessel by a manipulation of said lid; and

a tray having a second engaging means for engaging said container body and removably fixing said container body to said tray and having a third engaging means for, when said lid is removed from said container, engaging said lid and removably fixing said lid to said tray.

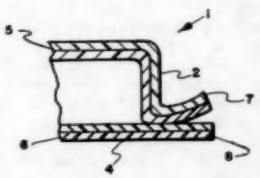
4,382,513
PACKAGES HAVING READILY PEELABLE SEALS

Henry G. Schirmer, Spartanburg, S.C., and Mario Gillio-Tos, Milan, Italy, assignors to W. R. Grace & Co., Cryovac Div., New York, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,078

Int. Cl.³ B65D *65/26;* B65B *25/06*

U.S. Cl. 206—484 8 Claims



1. In the process of sealing and opening packages constructed from thermoplastic film and having large flange areas, the improvement which comprises forming a readily peelable seal between the surfaces of two unoriented films whose sealed together surfaces comprise polyolefin material, by performing the steps of:

a. irradiating each polyolefin film with ionizing radiation to a minimum dosage level of about 3 MR to cross-link same;

b. forming a package by heat sealing a portion of the surfaces of said cross-linked polyolefin films together with a product enclosed therebetween to cause said films to bond together in a hermetic seal in the flange area around the perimeter of the product; and, thereafter,

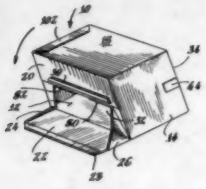
c. opening said package by peeling said films apart in the sealed area without rupturing either of the films.

4,382,514

DISPENSER CARTON

Donald L. Williams, Morris, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 1, 1981, Ser. No. 259,504
Int. Cl.³ B65D *5/08, 5/54*
U.S. Cl. 206—626 **3 Claims**



1. A dispensing carton comprising:
(a) a pair of opposed top and bottom panels;
(b) a pair of side panels extending between side edges of said top and bottom panels;
(c) a plurality of flaps foldably connected to back edges of said top, bottom and side panels, said flaps being overlapped and secured together to form a back closure for said carton;
(d) a front panel foldably connected to a front edge of said top panel and disposed perpendicular to said top panel, said front panel having a bottom free edge spaced apart from said bottom panel to provide a dispensing opening for said carton;
(e) a pair of opposed panels foldably connected to front edges of said side panels and disposed perpendicular to said side panels, said opposed panels and said front panel overlapping each other and being secured together to form a portion of a front closure for said carton;
(f) a dispenser flap foldably connected to a front edge of said bottom panel, said dispenser flap being disposed perpendicular to said bottom panel and spanning said dispensing opening to close the latter;
(g) releasable means securing said dispenser flap to said front panel; and
(h) a pair of web panels, each of said web panels being foldably connected to a side edge of said dispenser flap and foldably connected to an edge of each of said opposed panels, along a skew fold line disposed at an acute angle with respect to the adjacent one of said front edges of said side panels, each of said web panels being traversed by a medial fold line extending to a free edge of each of said web panels whereby said web panels can be folded back upon themselves and tucked beneath said dispenser flap when the carton is closed, and said web panels further being operable, by reason of the acute angle relationship between said skew fold lines and said front edges of said side panels, to hold said dispenser flap at an acute angle with respect to said front panel when said dispenser flap is pivoted about its fold connection with said bottom panel to open said carton.

4,382,515

SEPARATION OF LIMESTONE FROM LIMESTONE ORE

Brij M. Moudgil, Ontario, Calif., assignor to Occidental Research Corp., LaVerne, Calif.

Continuation of Ser. No. 897,740, Apr. 19, 1978, Pat. No. 4,208,272. This application Jun. 13, 1980, Ser. No. 159,202
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ B07C *5/02*
U.S. Cl. 209—3.3 **20 Claims**

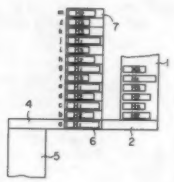
1. A method for the separation of higher-grade limestone from lower-grade limestone and the gangue present in particulate limestone ore which comprises:
(a) conditioning the particulate limestone ore of a particle size of from about ¼ inch to about 8 inches with at least one coupling agent selected from saturated and unsaturated carboxylic acids containing from about 4 to about 22 carbon atoms, said coupling agent selectively coating the calcium carbonate in the limestone to the substantial exclusion of coating gangue in combination with providing at least one fluorescent dye to said coupling agent;
(b) irradiating in an irradiating zone the fluorescent dye contained on the conditioned particulate limestone ore to excite and induce fluorescence of the fluorescent dye to a degree sufficient to distinguish coated higher-grade limestone particles from coated lower-grade limestone;
(c) passing the conditioned particulate limestone ore in free-fall through a fluorescence detection zone and detecting the intensity of fluorescence of the falling particles; and
(d) separating fluorescing higher-grade limestone particles from the lesser fluorescing lower-grade limestone and substantially nonfluorescing gangue particles by deflecting fluorescing higher-grade limestone particles by impinging a directed fluid stream upon such fluorescing higher-grade limestone particles; and collecting the deflected higher-grade limestone particles separate of the lower-grade limestone particles and gangue particles.

4,382,516

METHOD OF AND APPARATUS FOR CLASSIFYING STEEL PRODUCTS

Koji Inazaki; Takayuki Ueda; Toshihiro Oka, and Rippo Kawai, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,254
Int. Cl.³ B07C *5/14*
U.S. Cl. 209—517 **9 Claims**



1. A method of sorting various kinds of steel products which are delivered by an inlet table in a random manner, said method comprising the steps of accumulating a random plurality of said steel products temporarily on a sorting apparatus having variable mounting position; selecting any desired one from said random plurality of steel products accumulated on the sorting apparatus and forwarding the selected steel product to an outlet table, while taking a subsequent random steel product from said inlet table; and repeating the above-mentioned steps, whereby said steel products of various classes transferred into said sorting apparatus in a random manner are successively sorted into desired classes and forwarded to an outlet table.

4,382,517

PANELS FOR HOLDING PRINTED CIRCUIT BOARDS

John H. Welsch, Moscow, Pa., assignor to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

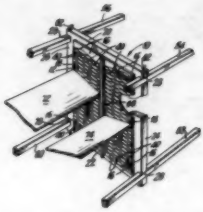
Filed Feb. 20, 1981, Ser. No. 236,616
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—41 **9 Claims**

1. Panels for holding printed circuit boards in a cart and the like, comprising:
at least a pair of panels;

each panel including side edges and a front surface disposed between said side edges;

said front surfaces having raised portions to provide recess means for receiving edges of the printed circuit boards therein;

said recess means extending at an inclined angle to said side edges of said panel to hold the printed circuit boards in an inclined position between said two panels; and



said recess means including first and second sets of recesses, said first set extending at a specific inclined angle with respect to one panel side edge and said second set extending at said specific inclined angle with respect to the opposite panel side edge to define a crisscross arrangement with said first and second sets of recesses intersecting each other to provide spaced apart columns of V-shaped intersections.

4,382,518

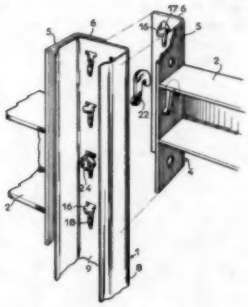
ASSEMBLY BETWEEN A POST AND A RAIL FOR A STORAGE RACK OR THE LIKE

Guy Bondoux, Orleans, France, assignor to Compagnie Generale de Manutention et de Stockage, Paris, France

Filed Feb. 4, 1981, Ser. No. 231,562

Int. Cl.³ A47F 5/00

U.S. Cl. 211—192 **7 Claims**



1. An assembly which is for a storage rack or the like and is capable of being taken down, comprising at least one hollow post having a side provided with two rows of identical openings extending longitudinally of the post, a rail, a rigid L-section plate rigid with an end of the rail, the plate carrying hooking means for hooking in the openings of the post, the openings of the post having the general shape of a T which has a cross-portion and an upright portion, the upright portion having lateral walls which are convergent in a part of the upright portion remote from the cross-portion of the T, the plate having a first side parallel to the rail and a second side perpendicular to the first side, the hooking means comprising at least two triangular tabs which are substantially perpendicular to a face of said first side of the plate which is adjacent said rail and are each connected by a curved strip to a boss which has lateral walls which are convergent in the same way as the lateral walls of the upright portion of the corresponding opening of the post, whereby the boss fits exactly in said opening.

4,382,519

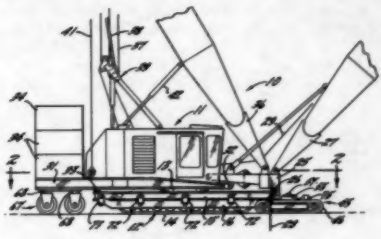
TRAVELING ATTACHMENT FOR RING SUPPORTED LIFT CRANE

Daniel E. Beduhn, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation of Ser. No. 222,696, Jan. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 58,285, Jul. 17, 1979, abandoned. This application Sep. 25, 1981, Ser. No. 305,519

Int. Cl.³ B66C 23/78, 23/73

U.S. Cl. 212—195 **4 Claims**



1. In a crane having an upper structure pivoted on a lower carbody including crawler means for moving the crane over the ground, the combination comprising, a pair of support beams secured to and forming a part of said lower carbody, a track-like ring secured to said beams and horizontally surrounding said lower carbody and said crawler means, said beams extending fore and aft beneath and beyond the periphery of said ring, a boom carrier pivoted for vertical movement on said upper structure and riding for rotation on said ring, a boom mounted on said boom carrier for lifting a load, a counterweight carrier pivoted for vertical movement on said upper structure and riding for rotation on said ring, means interconnecting said counterweight carrier and said boom for counteracting a heavy load, and a traveling support attachment including a pair of laterally spaced crawler assemblies respectively attached outboard of said ring to the forward ends of said pair of beams by means including a cross frame interconnecting said crawler assemblies and a plurality of frame elements interconnecting said crawler assemblies and said lower carbody, said crawler assemblies are connected to said frame elements through vertical pivot posts, means for pivoting said crawler assemblies about the axis of said posts, and said cross frame including jack means mounted thereon to support said ring and to permit movement of said crane and ring over the ground while said boom is lifting a heavy load.

4,382,520

FLOW CONTROL STRUCTURES

Hans P. Aleff, Cumberland, R.I., assignor to Cia. Vinicola del Vergel, S.A., Gomez Palacio, Mexico

Filed Dec. 22, 1980, Ser. No. 218,539

Int. Cl.³ B65D 49/02

U.S. Cl. 215—21 **6 Claims**

1. A flow control structure for use in controlling the direction of liquid flow through an opening located at the top of a container so as to permit flow from the interior of said container when said container is in an inverted position in which at least part of the interior of said container is above said opening and so as to prevent liquid flow into the interior of said container, said structure having an upper and lower end and an internal passage leading between its ends, said structure also including a holding means for holding said structure with

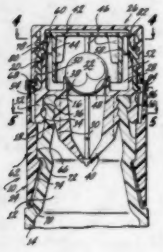
respect to said container so that all flow through said opening is through said internal passage in which the improvement comprises:

said structure including a fitment and a pouring cap,

said fitment having an exterior shaped so as to fit against the interior of said container adjacent to said opening so as to prevent flow between the exterior of said fitment and said container,

said fitment including an elongated tube extending from one side to the other side of said fitment from generally adjacent to the lower end thereof toward the upper end thereof and an upwardly facing annular channel located around said tube, said annular channel being located between the ends of said tube,

a pouring cap located on the upper side of said fitment adjacent to the upper end of said fitment, said pouring cap including an imperforate top, an annular imperforate wall dependent from said top and positioning means for positioning said cap on said fitment so that said annular wall fits within said annular channel in such a manner that flow through said channel past said annular wall is possible and so that said upper end of said fitment fits within said annular wall in such a manner that flow through said cap from the interior of said tube to said channel is possible,



said positioning means including a plurality of discharge openings located immediately beneath said top on the exterior of said annular wall in communication with said annular channel, said openings extending completely around said top,

said annular channel and the portion of said annular wall fitting within said annular channel constituting a first, upwardly directed air trap,

the upper end of said tube fitting within said annular wall so as to serve as a second, downwardly directed air trap; and

said holding means serving to engage said pouring cap so as to hold said pouring cap against said fitment in order to hold both said pouring cap and said fitment in place.

4,382,521

VENTED CLOSURE

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Ethyl Products Company, Richmond, Va.

Filed Jul. 17, 1981, Ser. No. 284,230

Int. Cl.³ B65D *51/16*

U.S. Cl. 215—307 **4 Claims**

1. A thermoplastic closure suitable for fitment to a threaded container neck, which closure comprises:

(a) a top wall;

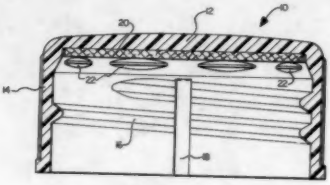
(b) an annular sidewall downwardly depending from said top wall;

(c) a sealing liner positioned adjacent said top wall, said sealing liner cooperating with the upper portion of said container neck to effect a fluid tight seal when said closure is fitted to said container;

(d) a plurality of spaced apart retaining beads on the upper inside portion of said annular sidewall below said sealing liner, said retaining beads maintaining said sealing liner in its said position adjacent said top wall;

(e) a closure thread carried on the inside surface of said annular sidewall for cooperation with said container neck thread; and

(f) a vertical venting groove inside said surface of said sidewall, said venting groove,



(i) extending from a point above said closure thread to a point adjacent to the lowermost portion of said annular sidewall,

(ii) interrupting said closure thread at each intersection of said venting groove with said closure thread, and

(iii) being positioned at its uppermost extent at a point adjacent the space between two of said retaining beads.

4,382,522

TAPE COVER OF MAGNETIC TAPE CASSETTE AND PROCESS FOR PREPARING TAPE COVER

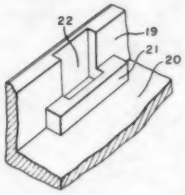
Seiki Shimazu, and Masaoki Sekine, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,910

Claims priority, application Japan, Nov. 13, 1979, 54/146069

Int. Cl.³ B65D *43/16*; B29G *2/00*; G03B *1/04*

U.S. Cl. 220—337 **2 Claims**



1. A cover for a magnetic tape cassette, comprising:

an L-shaped molded body formed of a resinous material, said body including a front plate and an upper plate having a joint therebetween;

an erroneous insertion detection notch formed in said body at a first front plate surface and a second upper plate surface of said joint; and

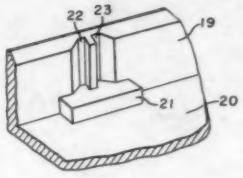
a sprue formed on a third surface of said body in said notch, said sprue comprising resinous material from an outlet of a mold, at least a portion of said sprue being spaced from said second surface by a first distance, wherein the thickness of said upper plate adjacent said notch comprises a first thickness, said first thickness being less than said first distance.

4,382,523

TAPE COVER OF MAGNETIC TAPE CASSETTE AND PROCESS FOR PREPARING TAPE COVER

Masaoki Sekine, and Seiki Shimazu, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,912
Claims priority, application Japan, Nov. 29, 1979, 54-153645
Int. Cl.³ B65D *43/16*; B29G *2/00*; G03B *1/04*
U.S. Cl. 220—337 2 Claims



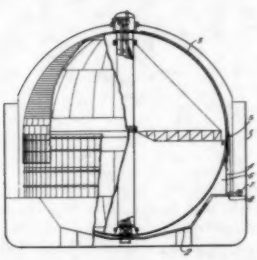
1. A cover for a magnetic tape cassette comprising:
an L-shaped molded body formed of a resinous material, said body including a front plate and an upper plate having a joint therebetween;
an erroneous insertion detection notch formed in said body at a first front plate surface and a second upper plate surface of said joint; and
a sprue formed on a third surface of said body in said notch, said sprue comprising resinous material from an outlet of a mold, wherein the upper plate has a first thickness at said sprue and a second thickness at either side of said sprue, said second thickness being less than said first thickness.

4,382,524

SPHERICAL TANK SUPPORTED BY A VERTICAL SKIRT

Rolf Kvamsdal, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway

Continuation of Ser. No. 843,257, Oct. 18, 1977, abandoned.
This application Jun. 29, 1979, Ser. No. 53,307
Claims priority, application Norway, Oct. 21, 1976, 763591
Int. Cl.³ B65D *90/04*
U.S. Cl. 220—445 1 Claim



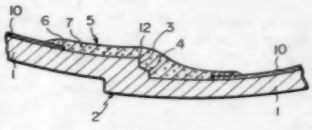
1. Means for storing liquefied gas, such as LNG or LPG or heavier petroleum products comprising, the combination of, a spherical tank, a marine vessel having a bottom hull structure surrounding the bottom hemisphere of said tank, a skirt which has an upper edge substantially at the horizontal equator of said tank and which extends downwardly therefrom and is attached to said hull structure, said skirt and said hull structure providing the sole support for said tank and forming therewith a fluid-tight enclosed space surrounding substantially the entire bottom surface of said lower hemisphere of said tank, and a pressure-regulating system which is operative to regulate the pressure within said enclosed space and is adapted to produce a partial-vacuum condition in said space to enable said tank to withstand buckling stresses when the cargo in said tank is of the order of 5% to 60% of the full capacity of said tank, said pressure-regulating system also being operative to increase the pressure in said enclosed space to exert upward pressure on said lower hemisphere of said tank to aid in supporting said lower hemisphere of said tank and the cargo to thereby reduce the load component on said skirt which is due to the weight of said tank and the cargo in said tank when the amount of said cargo makes it desirable to do so to thereby permit said tank to be filled with heavier cargo.

4,382,525

SIDE SEAM-COATED WELDED CANS AND PROCESS FOR PREPARATION THEREOF

Seishichi Kobayashi, Yokohama; Tatsuo Mori, Kawasaki; Tetsuo Miyazawa, Yokohama; Kazuo Taira, Tokyo; Makoto Horiguchi, Fujisawa, and Susumu Takahashi, Yamato, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,148
Claims priority, application Japan, Jun. 30, 1979, 54-82017; Jun. 23, 1980, 55-15515
Int. Cl.³ H05B *3/68*
U.S. Cl. 220—456 8 Claims



1. A side seam-coated welded can comprising a welded can body having a seam on the side face and a resin coating layer coating at lease one surface side of the seam, wherein said coating layer comprises a thermosetting resin suitable for paint manufacture and a thermoplastic resin having a softening point of 50° to 300° C. as determined according to the ring and ball method, at a volume ratio ranging (A) from 95/5 to 25/75 or (B) from 20/80 to 1/99, and one of said two resins is present in the coating in the form of a continuous phase and at least a part of the other resin is present in the coating in the form of fine dispersed particles having a number average particle size of 0.1 to 80 μm, said thermoplastic resin containing in the main chain or side chain thereof carboxyl groups at a concentration of 12 to 1400 meq per 100 g of the polymer derived from a carboxylic acid, carboxylic acid salt, carboxylic acid anhydride, carboxylic acid ester, carboxylic acid amide, ketone, carbonic acid ester, urea or urethane and having at least a film-forming molecular weight.

4,382,526

DISPENSING CONTAINER AND BLANKS THEREFOR

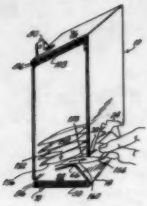
Orison W. Stone, New Haven, Vt., assignor to Pack Image Incorporated, Middlebury, Vt.

Filed Apr. 24, 1979, Ser. No. 32,741
Int. Cl.³ A47F *3/024*; B65D *5/72*
U.S. Cl. 221—34 3 Claims

1. A hexahedral container for dispensing stacked packets through a mouth opening in a lower portion of a front wall of the container and for displaying one of said packets on the front wall, having
means for attaching the container to a supporting structure so that a stack of packets is generally vertical;
a rear wall flap, normally closed by an interlocking tab, to provide access to the container to permit rear loading of packets into the container;
a mouth opening and support structure formed by infolding portions of the front and side walls of the container from a lip cut line on the front and side walls of the container, said structure providing underneath support for the stack

of packets forward of the center of gravity of the stack so that the packets are inclined downwardly and rearwardly toward the rear wall flap of the container; and

a pair of display cut lines in the front wall of the container for holding one of the packets on the front wall of the container for display;



whereby, the bottommost packet in the stack is removable by grasping through the mouth opening and pulling outwardly from the container, whereby a lower portion of the front wall bounded by the lip cut line resists removal of additional packets in the stack as the bottommost packet is removed, and whereby the attaching means prevents movement of the container away from the supporting structure as the bottommost packet is removed.

4,382,527

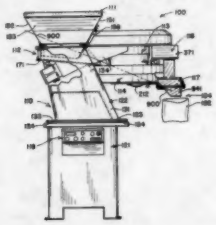
ARTICLE HANDLING SYSTEM WITH DISPENSER

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 833,261, Sep. 14, 1977, Pat. No. 4,247,019, which is a continuation-in-part of Ser. No. 618,025, Sep. 30, 1975, abandoned, and Ser. No. 618,079, Sep. 30, 1975, abandoned. This application Dec. 3, 1979, Ser. No. 99,937

Int. Cl.³ G01G *13/08*

U.S. Cl. 222—56 **22 Claims**



12. An apparatus for dispensing weighed batches of articles, comprising:

(a) an upstanding base structure;

(b) a vibratory feeder carried by the base structure and having a bowl type feeder hopper for feeding articles to the discharge station;

(c) weighing means carried by the base structure and having an accumulator for collecting and weighing articles passing through the discharge station;

(d) the feeder hopper having sidewall defining a first discharge opening and an upwardly extending ramp communicating with a second discharge opening, the first and second discharge openings being located near each other and at the discharge station; and,

(e) flow restriction means for selectively restricting the flow of articles discharging through the first opening.

4,382,528

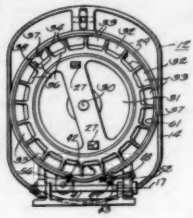
PLANTER HOPPER WITH WEAR RING

Alexander T. Gafford, La Porte, and Charles E. Adams, Mill Creek, both of Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 10, 1981, Ser. No. 291,457

Int. Cl.³ G01F *11/10*

U.S. Cl. 222—367 **3 Claims**



1. A planter having a seed hopper with a cylindrical wall at its lower end confronting an annular seed singulating plate rotatable about a vertical axis characterized by

an annular wear ring of wear resistant material removably positioned at the lower end of said seed hopper and disposed in radially confronting relation to the circumferential periphery of said seed singulating plate, said ring being circumferentially split and

means releasably connecting one circumferential end of said ring to the lower end of said hopper limiting circumferential movement of said ring relative to said lower end.

4,382,529

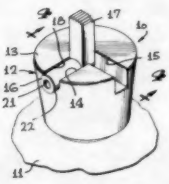
SANITARY DISPENSING CLOSURE

Frank J. Drdlik, 3634 San Jose La., Santa Barbara, Calif. 93105

Filed Dec. 15, 1980, Ser. No. 216,569

Int. Cl.³ B65D *47/00*

U.S. Cl. 222—531 **7 Claims**



1. A sanitary dispensing closure for use in conjunction with a screw-on type, plastic squeeze discharge container comprising the combination of:

a screw-on cap having a cylindrical body closed at one end with a top having a pair of cavities provided therein arranged normal to each other;

a combined actuator and dispensing nozzle arranged normal to each other movably carried in said pair of cavities respectively wherein said actuator moves in and out of its associated cavity and said dispensing nozzle rotates in response to movement of said actuator;

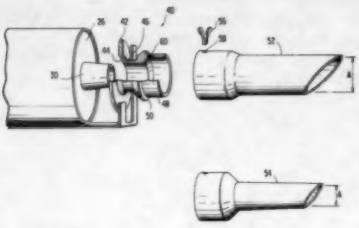
an open-ended passageway extending through said dispensing nozzle terminating at one end in a discharge orifice and at its other end in an inlet port; and

said top having an aperture in fluid communication with the interior of the container and adapted to register with said passageway inlet part when said dispensing nozzle is rotated by said actuator.

4,382,530
INTERCHANGEABLE NOZZLE APPARATUS

Anthony R. Calisto, 7502 Central Ave., Takoma Park, Md. 20012

Filed Jul. 1, 1981, Ser. No. 279,385
Int. Cl.³ B65D *25/48*
U.S. Cl. 222—567 **6 Claims**



1. A nozzle attachment apparatus for use with an extruding tool and a container of extrudable material, said container having an opening at one end thereof and said tool being of the type having a bifurcated retaining member for abutting said one end of said container, said bifurcating retaining member having a slot therein, said attachment apparatus comprising:

a base member fittable over said opening and having a base mounting portion at one end thereof, a flanged portion at its other end having a dimension larger than that of said slot and a central portion connecting said flanged and base mounting portions and fittable into said slot;

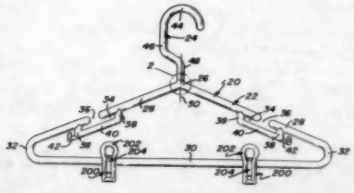
attachment nozzle means having an extrusion orifice at one end and fittable at its other end to said base mounting portion, said attachment nozzle means comprising a plurality of nozzles each of which is fittable to said base mounting portion and any one of which may be secured to said base member at one time, each of said attachment nozzles including an attachment mounting portion having a mating configuration with said base mounting portion; and

securing means for securing said base mounting portion to the attachment mounting portion on one of said nozzle attachments.

4,382,531
HANGER WITH SWIVEL HOOK AND SKIRT AND TROUSER CLIPS

Leonard Bisk, Elkins Park, and Gunther Rogahn, Lansdale, both of Pa., assignors to Independent Products Company, Inc., Lansdale, Pa.

Division of Ser. No. 137,930, Apr. 7, 1980, Pat. No. 4,335,838. This application Nov. 6, 1981, Ser. No. 318,888
Int. Cl.³ A47J *51/098, 51/14*
U.S. Cl. 223—91 **11 Claims**

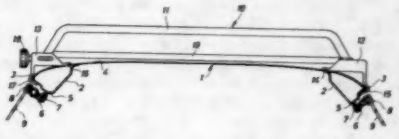


1. A hanger for garments which is formed entirely of plastic and comprising an integral body portion and hook means connected thereto for supporting said body portion, said body portion including a neck portion having a longitudinal axis, a pair of arms diverging therefrom and a cross-bar interconnecting the outer ends of said arms, said body portion and said hook means each being substantially cylindrical in cross-section along its entire length, said hook means including an arcuate upper portion and a connecting portion, said connecting portion and said neck portion being readily securable to each other along said longitudinal axis, one of said neck and connecting portions including a cylindrical socket formed of a continuous sidewall having a smooth outer surface and a hollow interior including an entrance on said longitudinal axis, said sidewall including collar means projecting radially inward into said hollow interior and encircling the longitudinal axis of said portion and the other of said neck and connecting portions including a cylindrical shaft having an annular recess, said shaft being arranged for insertion through said entrance along said longitudinal axis to snap fit within said recess to secure the shaft therein against accidental removal and to enable the body portion and the hook means to be swiveled relative to each other about said longitudinal axis.

4,382,532
FASTENING DEVICE FOR A ROOF RACK FOR LUGGAGE

Karl Pflugfelder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,140
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004919
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—331 **3 Claims**



1. A fastening device for a roof rack for luggage, skis and the like, comprising supporting bars which take up the load and which are provided at their ends with supporting legs which can be clamped to the lateral roof rails, said legs being designed to rest upon the roof upper surface close to the lateral roof rails and to embrace the lateral roof rails, one leg of each bar being rigidly and the other leg being adjustably attached to the bar such that the bar can be clamped between the lateral roof rails by fastening the adjustable leg, the adjustable leg comprising a guide supporting the respective leg of the bar for horizontal movement, and a tightening screw arranged parallel to the guide and engaging said end and abutting against the leg.

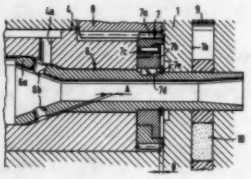
4,382,533
EXPLOSIVE POWDER OPERATED SETTING DEVICE

Franz Buechel, Ruggell, Liechtenstein, and Peter Jochum, Meiningen, Austria, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 23, 1981, Ser. No. 257,420
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 3016280
Int. Cl.³ B25C *1/08*
U.S. Cl. 227—10 **9 Claims**

1. An explosive powder operated device for using the propellant gases generated when an explosive powder charge is ignited for driving fastening elements, such as bolts, studs, nails and the like, into a receiving material; comprising a housing having a front end from which the fastening elements are driven and a rear end, a barrel forming an axially extending bore and having a front end and a rear end and being slidably mounted in said housing for movement in the front end and rear end direction, said housing having at least one exhaust

duct section for discharging propellant gases, said barrel having an exhaust duct section in communication with said exhaust duct section in said housing, means in combination with said housing forming a combustion chamber for the explosive powder charge with the combustion chamber being located rearwardly of the rear end of said barrel, said means including a tubular slide valve rotatably mounted in the rear end of said barrel, said slide valve having a front end located within said barrel and a rear end forming a part of said combustion chamber, a piston slidably mounted in the bore in said barrel for displacement toward the front end of said barrel with said piston located forwardly of the front end of said slide valve so that said piston can be driven toward the front end of said barrel by propellant gases for driving a fastening element out of the barrel into the receiving material, said barrel in combination with the front end of said slide valve forming a working space for receiving propellant gases through said slide valve



from said combustion chamber so that the propellant gases can drive said piston toward the front end of said barrel, means for securing said slide valve within said barrel for permitting limited axial displacement of said slide valve relative to said barrel, said slide valve having a funnel-like part at the front end thereof with a frusto-conically shaped outside surface widening in the direction toward the front end of said barrel, said barrel having a corresponding frusto-conically shaped inside surface in the bore thereof arranged to receive said funnel-like part in surface contact for providing a seal therebetween, said funnel shaped part limiting the axial movement of said slide valve in the direction toward the rear end of said barrel, and said slide valve having radially extending openings therethrough from the inside to the outside surfaces thereof so that at least one of the openings can be aligned with said exhaust duct section in said barrel for releasing a selected amount of the propellant gases from the working space for regulating the amount of the propellant gases available for driving said piston.

4,382,534

MANUFACTURE OF LAMINATED MATERIAL

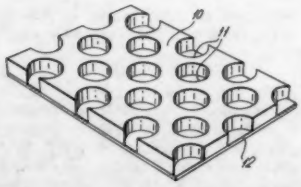
William C. T. Kwan, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed May 13, 1981, Ser. No. 263,195

Claims priority, application United Kingdom, Jun. 13, 1980, 8019404

Int. Cl.³ B23P *17/00*; F23R *3/42*

U.S. Cl. 228—161 **5 Claims**



1. A method of manufacturing laminated material from at least three sheets, a first sheet, a central sheet and a second sheet, comprising the following steps:

(a) perforating the central sheet with a plurality of spaced apertures,

(b) securing the perforate central sheet to the first sheet,

(c) machining channels through the central sheet to intersect said apertures thereby forming an assembly comprising the first sheet with spaced lands secured thereto,

(d) perforating the first sheet with a plurality of spaced apertures to form air entry holes,

(e) securing the second sheet to the assembly to form a laminated structure, comprising the perforate first sheet and second sheet separated by the spaced lands machined from the central sheet.

4,382,535

METHOD, DEVICE AND FILLER METAL FOR FLUXLESS SOLDERING

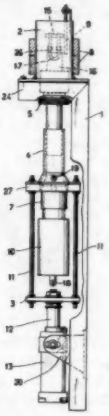
Yves Le Penven, Fontenay sous Bois, and Danial Gabard, Paris, both of France, assignors to Centre Technique des Industries Mecaniques (CETIM), Senlis, France

Filed Dec. 12, 1980, Ser. No. 216,006

Claims priority, application France, Dec. 17, 1979, 79 30824

Int. Cl.³ B23K *1/06*

U.S. Cl. 228—262 **14 Claims**



3. An ultrasonic soldering device, comprising:

a frame;

a receptacle supported by said frame and adapted to contain filler material, said receptacle having an aperture in a lower portion thereof;

a means adapted to heat the filler material, said heating means associated with said receptacle;

a sonotrode having a working end slideably and sealingly projecting through the aperture in said receptacle, the working end of said sonotrode having a surface configurationally complementary to a part of a workpiece which defines means to contact said part of said workpiece, such that ultrasonic energy is concentrated at the locus of soldering;

an ultrasonic energy amplifier secured to the other end of said sonotrode;

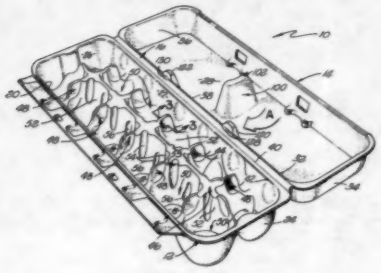
an ultrasonic energy generator secured to said ultrasonic energy amplifier; and

a means for slideably moving said sonotrode through said aperture.

4,382,536
FOAM EGG CARTON

Wayne L. Congleton, Walnut, Calif., assignor to Dolco Packaging Corporation, Sherman Oaks, Calif.

Filed Feb. 17, 1981, Ser. No. 235,203
Int. Cl.³ B65D 1/24
U.S. Cl. 229—2.5 EC 11 Claims



1. A one-piece carton, integrally molded from a sheet of polystyrene material having an expanded foam layer and an integrally formed non-expanded polystyrene skin on one side of the foam layer for storing and shipping eggs comprising:

a bottom tray and a cover, each having a base and front, rear and end walls, interconnected to one another and to the base so that each forms an open substantially box-like structure;

hinge means connecting the tray and the cover along the top edges of the respective rear walls thereof;

egg-separating members in the interior of the tray comprising:

at least one longitudinal partition member, having a pair of contoured diverging longitudinal walls extending downwardly toward the tray base and located between the end walls of the tray, and

a plurality of transverse partition members, each with a pair of contoured diverging transverse walls extending downwardly toward the tray base, located between the front and rear walls of the tray and intersecting the longitudinal partition member for defining a plurality of cells in the tray, each cell having a concave egg contacting inner side wall extending upwardly from the tray base and defined by at least one section of one of the longitudinal walls and at least one section of one of the transverse walls intersecting the one longitudinal wall section, each intersection between one of the transverse walls and one of the longitudinal walls defining a concave transition region of the inner side wall, each contoured inner side wall of each cell being dimensioned to house therein a major portion of an egg in contacting relationship thereto said egg contacting inner side wall having at least one vertical concave expansion groove impressed therein for enabling radially outward displacement of said egg contacting side wall about its circumference to enlarge the circumference of the egg cell as an egg is inserted therein, whereby said egg cell can receive variably sized eggs.

4,382,537
OCTAGONAL BULK BIN

Herbert D. Muise, Orange, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 27, 1981, Ser. No. 287,459
Int. Cl.³ B65D 5/10
U.S. Cl. 229—39 R 2 Claims

1. An octagonal bulk bin comprising

a pair of opposed side panels;

a pair of opposed end panels;

pairs of opposed corner panels extending between said side and end panels, said corner panels being narrower than said side and end panels;

said side, end and corner panels having a bottom edge in a common plane and top edge in a common plane;

said side, end and corner panels being substantially rectangular;

said side, end and corner panels defining a space having sides defined by said side, end and corner panels, a top defined by said top edge and a bottom defined by said bottom edge;

said bottom being closed by a bottom closure;

said bottom closure comprising

end closure flaps having an edge hinge to said bottom edge of said end panels and a free inner edge opposite its hinged edge;

the maximum distance between said hinged edge and said free inner edge of each end closure flap being one-half the distance between said end panels;

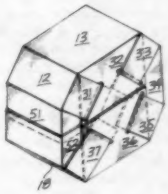
each of said end closure flaps being substantially rectangular;

said end closure flaps extending across said bottom and being substantially aligned with said bottom edge;

side closure flaps having an edge hinged to said bottom edge of said side panels and a free inner edge opposite its hinged edge;

the maximum distance between said hinged edge and said free inner edge of each side closure flap being one-half the distance between said side panel;

each of said side closure flaps being substantially rectangular;



each of said side closure flaps having a pair of obliquely oriented slots;

each of said slots extending between two points located within said side closure flap; the first of said points being adjacent a free corner of said side closure flap defined by said free inner edge of said side closure flap and a side edge of said side closure flap, and near an edge defining said free corner; the second of said points being nearer said hinged edge of said side closure flap than said first point and being nearer the center line of said side closure flap transverse to said hinged edge than said first point;

the placement of said slots in one side closure flap being identical to the placement of said slots in the other side closure flap; each slot in a side closure flap being a mirror image of the other slot in the same side closure flap;

said side closure flaps extending across said bottom along the outer faces of said end closure flaps;

corner closure flaps having an edge hinged to said bottom edges of said corner panels and a free inner edge opposite its hinged edge;

the maximum distance between said hinged edge and said free inner edge of each of said corner closure flaps being one-half the distance between said corner panels;

each of said corner closure flaps being substantially rectangular;

each of said corner closure flaps extending across said bottom along the outer faces of said side and end closure flaps, through said oblique slots and having its free inner edge between said side and end closure flaps;

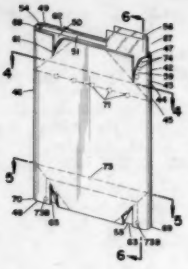
each of said slots being transverse to its respective corner closure flap.

4,382,538

VALVED LINED CONTAINER

Fred B. Wilharm, Cantonment, Fla., assignor to St. Regis Paper Company, West Nyack, N.Y.

Filed Sep. 26, 1980, Ser. No. 190,923
Int. Cl.³ B65D *30/26*
U.S. Cl. 229—62.5 **6 Claims**



1. A multiwall bag including an outer tube of nonheat sealable material formed at both ends with closures and having opposing flattened sides; an inner tube of heat sealable material having intermediate portions circumferentially and releasably bonded to the outer tube for manual detachment therefrom, a portion of its circumferential edge surface at one end at a corner formed with a flap, the remainder of its circumferential edge surface at the one end heat sealed to closure, and its opposite end heat sealed to closure; the outer tube closure at the one end comprising two opposing corner flaps and two opposing side flaps formed by cutting longitudinal slits in the flattened sides; one of the outer tube corner flaps constituting a valve support flap connected to and extending between the flattened sides and disposed intermediate the side flaps and the inner tube corner flap and cooperating with the side flaps to form a valve opening into the bag; a valve extension of heat sealable material in the valve opening connected by heat sealing to the inner tube corner flap and having side edges heat sealed together to form a tubular passage opening to the interior of the inner tube for filling the inner tube with the outer tube closures in their closed positions, the inner tube closure at the one end being separate from the outer tube closure at the corresponding end and being formed by the heat sealed side edges of the valve extension and said heat sealed circumferential edge surface at the one end, the inner tube closure at the opposite end being separate from the outer tube closure at the corresponding end.

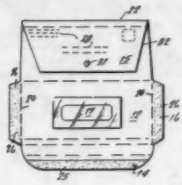
4,382,539

TWO-WAY ENVELOPES WITH RETURN FLAP POSITIONING MEANS AND METHOD

Albert F. Kronman, Parish Dr., Locust Valley, N.Y. 11560

Filed Jun. 8, 1981, Ser. No. 271,392
Int. Cl.³ B65D *27/06, 27/16*
U.S. Cl. 229—73 **27 Claims**

1. An envelope for two-way mailing formed from a one piece blank having substantially rectangular front and rear panels interconnected along three edges to provide a pocket, and an insert for transmittal therein receivable within said pocket between the unconnected panel edges of the pocket comprising a first sealing flap carried by and integral with one of said unconnected edges, a second return sealing flap carried by and integral with the other unconnected edge, said second return sealing flap being folded inwardly along the unconnected panel edge of its supporting panel to extend within the pocket and overlie said supporting panel and means including at least one spot of adhesive to couple the return sealing flap to the insert whereby the inwardly folded return sealing flap is



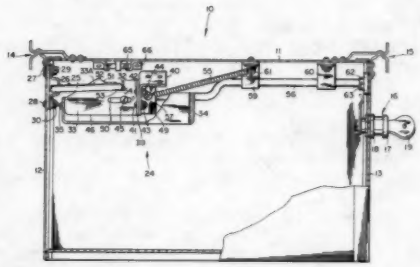
withdrawn from the pocket to its upright return sealing position when the insert is removed from the pocket.

4,382,540

DOUBLE-DOOR SECURITY RURAL MAIL-BOX

James B. Kelly, and Viola F. Kelly, both of 7255 Shelby St., Indianapolis, Ind. 46227

Filed Jul. 14, 1980, Ser. No. 168,126
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—17 **9 Claims**



1. A depository receptacle, comprising:
an elongated housing including an upper wall and being open at first and second opposite ends;
a front closure movably mounted at said first end for closing said first end;
a rear closure movably mounted at said second end for closing said second end, each of said closures having an inner and an outer surface;
a locking mechanism for locking said front and rear closures, said locking mechanism including a latching member formed of magnetically attractable material, a latching member mounting bracket mounting said latching member on the inner side of said front closure for limited vertical movement, a camming mechanism for engaging and moving said latching member in a vertical direction, a camming mechanism mounting bracket mounting said camming mechanism in said receptacle adjacent said upper wall and said latching member when said front closure is in a closed position, a magnet for magnetically attracting said latching member mounted on said upper wall adjacent said latching member, said camming mechanism mounting bracket including a retaining portion engageable by said latching member in its lower position to latch said front closure in the closed position, said camming mechanism including a movable portion mounted adjacent said retaining portion and engageable with said latching member for moving the latter out of engagement with said retaining portion to a position adjacent said magnet, whereby said latching member is attracted to and retained by said magnet; said camming mechanism further

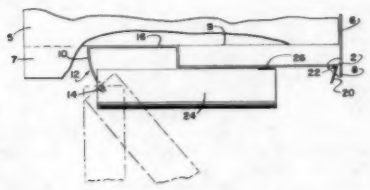
including an actuating mechanism for moving said movable portion in response to opening and closing of said rear closure, said locking mechanism including a lock mounted on said rear closure for locking the rear closure relative to said housing; whereby with the latching member in latched engagement with the retaining portion and with the front and rear closures in the closed position; when the rear closure is locked and opened, the actuating mechanism will move rearwardly toward the rear closure and the movable portion will move the latching member vertically out of engagement with the retaining portion to a position in which it is attracted and retained by the magnet to thereby unlatch the front closure, subsequent closing of the rear closure causing the actuating mechanism to return the movable portion and the actuating mechanism to their original position with the front closure unlatched and closed; upon opening of the front closure, the latching member is moved out of engagement with the magnet and falls to its lower position so that upon closing of the front closure, the latching member again engages the retaining portion and latches the front closure in the closed position.

4,382,541

INDICATOR FLAG FOR RURAL MAIL BOX

Lester E. Miller, 21 W. Mesquite Pl., Green Valley, Ariz. 85614

Filed Aug. 22, 1980, Ser. No. 180,198
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **10 Claims**



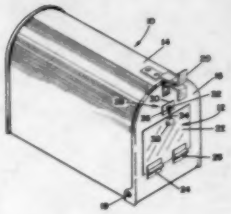
1. A mailbox opening indicating apparatus comprising a mailbox container having side walls and a top wall and a closed rear wall and having an open front end, the container being divided into upper and lower sections by a separating means which extends between side walls and from the rear wall to the open front end, a closure pivotedly disposed on a front end of the mailbox container and extending over the upper and lower section, an elongated flexible member positioned in the lower section and attached to a bottom of the separating means so that a frontal portion of the elongated flexible member is spaced from the separating means and extending toward a lower part of the door beneath its pivot, whereby when an upper part of the door is swung open around the pivot, the lower part of the door contacts the frontal portion of the elongated member and moves the frontal portion of the elongated member upward, an elongated indicating means having one end pivoted on the lower section of the container and having an opposite end releaseably connected to the elongated member, whereby when the elongated member is moved upward by the opening of the door, connection is broken between the free end of the indicating means and the elongated member, whereupon the indicating means falls around its pivot to a downward indicating position for indicating that the door has been open, and whereby when the door is closed, the door permits the frontal portion of the elongated member to move downward whereupon raising the indicating means about its pivot again connects the indicating means to the frontal portion of the elongated member.

4,382,542

MAIL SIGNAL APPARATUS

James W. Farris, Rte. 7, Box 192, Sparta, Tenn. 38583

Filed Nov. 13, 1980, Ser. No. 206,348
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **7 Claims**



1. A signaling apparatus for being mounted on the exterior face of a mailbox door that opens in a rotating downward direction, comprising:

a signal flap;

attachment means for attaching said signal flap to the exterior face of the mailbox door for movement between first and second positions, said signal flap being disposed in the first position to indicate the absence of mail in the mailbox, said signal flap being disposed in the second position to indicate the presence of mail in the mailbox;

latch means having a movable engagement member disposed at one end adjacent to the exterior face of said door and being configured to engage and hold said signal flap when disposed in the first position for securing said signal flap in the first position, said latch means being operable in response to the opening of the mailbox door to movably disengage said engagement member from said signal flap and release said signal flap to allow it to move to the second position; and

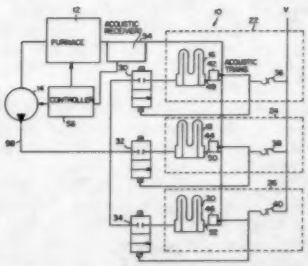
said signal flap being operable to move to said second position in response to the opening of said mailbox door.

4,382,543

ACOUSTIC CONTROL FOR ZONE HEAT CONTROL SYSTEM

Thomas R. Morrison, 137 Overlook St., Mount Vernon, N.Y. 10552

Filed Jun. 19, 1981, Ser. No. 275,331
Int. Cl.³ G05D *23/00*
U.S. Cl. 236—10 **11 Claims**



1. A heating control system for a structure of the type having at least one heated area with at least one heat delivering device in said at least one heated area, a furnace in a second area remote from said at least one heated area and means for

communicating fluid between said furnace to said at least one heat delivering device, comprising:

means for controlling delivery of said heated fluid to said at least one heat delivering device in response to a temperature in said at least one heated area;

means for imposing an acoustic signal on said means for communicating in response to said means for controlling whereby a demand for heat is indicated by the presence of said acoustic signal;

means in said second area for receiving said acoustic signal and means for controlling said furnace in response thereto; and

said means for controlling is effective to periodically deenergize at least one of said furnace and said means for communicating for a listening period and is further effective to re-energize the items deenergized only if said acoustic signal is present during said listening.

4,382,544

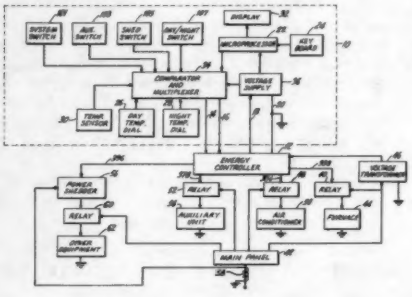
ENERGY MANAGEMENT SYSTEM WITH PROGRAMMABLE THERMOSTAT

John T. Stewart, Basking Ridge, N.J., assignor to J. T. Stewart Associates, Inc., Basking Ridge, N.J.

Filed Aug. 8, 1980, Ser. No. 176,572

Int. Cl.³ F23N *5/20*; G05D *23/00*

U.S. Cl. 236—46 R **7 Claims**



1. A system for controlling temperature in a user programmed manner comprising:

a programmable thermostat having a thermostat for measuring temperature at its location and a microprocessor capable of being programmed by a user to set a programmed temperature for each of selected periods of time;

an energy controller located remotely from the programmable thermostat for selectively activating energy using units connected to the energy controller in response to control signals received from the programmable thermostat;

a low voltage cable means for continuously supplying operating power to the programmable thermostat and for providing a communication channel for directing control signals from the programmable thermostat operating under program control to the energy controller to activate a selected energy using unit, including a selected energy using unit for maintaining the programmed temperature at the programmable thermostat location for each of the selected periods of time; and

wherein the programmable thermostat further includes multiplexing means for directing a multiplexed signal of multiple control signals on a communication channel whereby each of the multiple energy using units are controlled by a corresponding control signal received by the energy controller from the programmable thermostat.

4,382,545

BIMETAL-ACTUATED TEMPERATURE RESPONSIVE VALVE ASSEMBLY

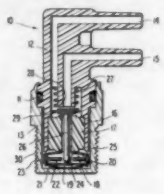
Atsushi Satomoto, 25-33, Chayama, Wakabayashi-Nishimachi, Toyota City, Japan

Filed Jan. 15, 1981, Ser. No. 225,222

Claims priority, application Japan, Jan. 21, 1980, 55-005497; Mar. 25, 1980, 55-039762

Int. Cl.³ G05D *23/10*

U.S. Cl. 236—48 R **5 Claims**



1. A bimetal-actuated temperature responsive valve assembly comprising body means provided with an inlet and an outlet, valve means for controlling communication between said inlet and outlet, a movable rod engageable with said valve means, a first bimetal disc engageable with said rod, spring means disposed between said body means and said first bimetal disc for biasing said first bimetal disc, said rod and said valve means in one direction for actuating said valve means, a second bimetal disc, force transmitting means between said first and second discs, said second bimetal disc being operatively interposed between said body means and said force transmitting means for moving said first bimetal disc against the bias of said spring means to thereby allow movement of said rod and valve means in the opposite direction.

4,382,546

TEMPERATURE RESPONSIVE VALVE DEVICE

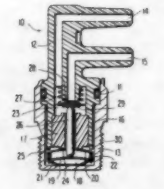
Atsushi Satomoto, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 30, 1981, Ser. No. 229,828

Claims priority, application Japan, Feb. 8, 1980, 55-15191

Int. Cl.³ G05D *23/10*

U.S. Cl. 236—48 R **9 Claims**



1. A temperature responsive valve device comprising a body having an inlet port and an outlet port, a valve chamber within said body connecting said inlet port with said outlet port, valve means located in said valve chamber to open and close communication between said inlet port and said outlet port, first and second bimetal temperature responsive discs located in a further chamber in said body, a rod extending between and disposed in engagement with said valve means and said first bimetal disc, said first bimetal disc being adapted to snap over center in response to a first temperature between a first position to urge said valve means in the closing direction through said rod and a second position to allow said valve means to move in the opening direction, spring means for supporting said first bimetal disc and biasing said first bimetal disc, said rod and said valve means in the closing direction, said second bimetal disc adapted to snap over center in response to a sec-

ond temperature lower than said first temperature between a first position forcing said first bimetal disc against said spring means to allow said valve means to move in the opening direction when said first bimetal disc is in its first position and a second position wherein said second bimetal disc exerts no force on said first bimetal disc whereby said valve means may move from an open condition, to a closed condition and then to a reopened condition in sequence in response to sequential changes in temperature.

4,382,547

RAILROAD TIE PLATE AND CORRECTABLE SHIM

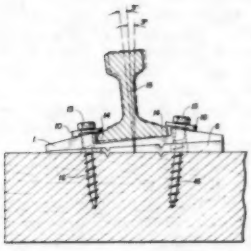
Albert A. Phillips, Rte. 1, Box 56A, Byars, Okla. 74831

Continuation-in-part of Ser. No. 127,995, Mar. 4, 1980, Pat. No. 4,260,105. This application Mar. 18, 1981, Ser. No. 245,203

The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.³ E01B *9/44, 9/10*

U.S. Cl. 238—303 **6 Claims**



1. An article of manufacture for securing a train rail to a series of wooden ties, forming a railroad trackway system, wherein the rail has an upper flange for the passage thereover of train wheels and a lower flange for securing of the rail to the railroad ties, comprising:

a plurality of rail supporting base plates, each said base plate being disposed over a railroad tie and each having a width approximately the width of the railroad tie upon which it is disposed, each said base plate having a bottom wall, at least one upper wall, and a sloped rectangular groove disposed in the upper wall and defined by a pair of groove sides and a groove bottom, said sloped rectangular groove extending the width of said base plate and having a width, which exceeds by approximately ¼ inch the width of the lower flange of the rail, so that the rail rests in said sloped groove upon said base plate with gaps of approximately ¼ inch between the sides of the lower rail flange and the sides of the rectangular groove, the sloped rectangular groove having a depth which exceeds the height of the lower flange of the rail adjacent the sides of the groove;

each said rail supporting base plate being thicker beneath one side of the rectangular groove than beneath the other side of the rectangular groove to provide the slope of said groove, said base plates being placed on the railroad ties such that the outside of each base plate is higher than the inside thereof;

said base plates each having one hole passing therethrough along the outside thereof and two holes passing therethrough along the inside thereof, said holes being adapted to receive therethrough securing screws for holding the base plates to the wooden railroad ties, and said base plates also having means projecting from the bottom walls thereof to prevent movement of the base plates relative to the railroad ties

a plurality of trapezoidally shaped shim plates, at least one said trapezoidally shaped shim plate being located immediately beneath a base plate over a railroad tie in a location where the rail is curved, each said trapezoidally shaped shim plate having three holes therein aligned with the three holes of the overlying base plate, the highest elevation of each shim plate being beneath the outside of the overlying base plate with the smaller elevation being beneath the inside of said base plate;

securing screws passing through the holes in said base plates and said trapezoidally shaped shim plates and for engaging with the underlying railroad ties, said screws being elongated and being disposed at a towed-in angle with the heads of said screws being spaced from said base plate; and

means to permit the rail to move slightly both horizontally and vertically when a train passes thereover comprising a stepped washer having a thickened portion at one side thereof disposed between the head of each such screw and said base plate to extend over the top of the bottom flange of the rail thereby leaving a gap between the bottom of said washer and the top of the lower flange of the rail, said means permitting the rail to move in a limited confined manner also comprising said gaps of approximately ¼ inch between the sides of said groove and the sides of the lower rail flange.

4,382,548

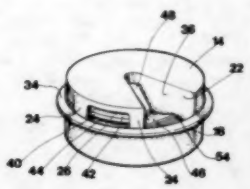
DISPENSER FOR AIR-TREATING VAPORS

Joahnnes van der Heijden, 61 Collingwood Crescent, Guildford, Surrey, England

Filed Jul. 9, 1981, Ser. No. 281,812

Int. Cl.³ A61L *9/12;* **B65D** *43/00*

U.S. Cl. 239—56 **10 Claims**



1. A dispenser for air-treating vapors comprising:

a shallow dish having a bottom and a surrounding upstanding wall;

an insert nested within the dish and having a cover and a plurality of sidewall segments adjacent to said wall and defining apertures therebetween, said cover defining a lever opening;

a lever within the opening hinged at one end to the cover and having an upper depression surface at its opposite end, said lever having a lower fulcrum in contact with said bottom midway between the lever ends, whereby depression of said depression surface raises the insert from its fully nested position to expose the apertures above the upstanding wall; and

a volatile air-treating material between said bottom and said cover.

4,382,549

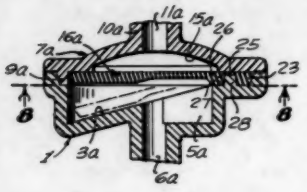
IRRIGATION EMITTER

Mark H. Christy, 1534 E. Edinger, Santa Ana, Calif. 92705, and Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105

Continuation of Ser. No. 9,753, Feb. 5, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,523

Int. Cl.³ A01G *25/16;* **B05B** *1/08*

U.S. Cl. 239—106 **9 Claims**



1. An emitter adapted for installation in an intermittently operated irrigation system and comprising:

a housing having a chamber therein defined by an inlet wall having an inlet port and an outlet wall having an outlet port, the inlet and outlet walls diverging from a common apex;

an elastomeric emitter plate in said chamber and secured to said adapter at said apex and being normally biased to be in face-to-face contact against said inlet wall and swingable about said apex into face-to-face contact with said outlet wall;

the faces of said emitter plate being of substantially the same shape as said inlet and outlet walls, respectively, whereby said emitter plate can swing about said apex into face-to-face contact with either of said walls without substantial bending;

the confronting surfaces of the emitter plate and outlet wall defining momentarily below a predetermined low water pressure and while spaced apart, a flush flow water passage therebetween discharging from the outlet port;

the confronting surfaces of the emitter plate and outlet wall defining a drip flow water passage therebetween, when in face-to-face contact.

4,382,550

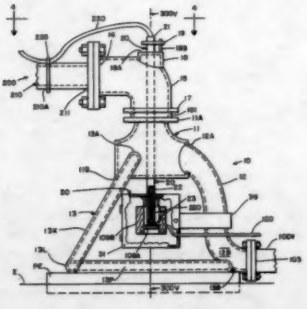
CENTRAL-PILLAR ASSEMBLIES FOR CENTER-PIVOT IRRIGATION APPARATUSES

Theodore V. Olson, P.O. Box 758, Atkinson, Nebr. 68713

Continuation of Ser. No. 128,511, Mar. 10, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,343

Int. Cl.³ B05B *3/02*

U.S. Cl. 239—177 **9 Claims**



1. In a self-propelled sprinkler irrigation apparatus including a vertical-axis center-pivot located at a central-pillar assembly site of the land tract to be irrigated, said central-pillar site including water delivery means comprising a water inflow-pipe and outflow-elbow means located loftily above the land tract and further including medial-piping therebetween, a generally horizontal lengthy water distributing conduit extending radially outwardly from the center-pivot and communicating with the outflow-elbow means and having a plurality of underlying traction supports, the central-pillar assembly below the outflow-elbow means including journal means to permit the lengthy water distributing conduit to rotate around said vertical-axis center-pivot, an electrical pathway including incoming powerline and outgoing electrical cable means including a plurality of parallel electrical conductors, said electrical pathway including commutation means at the central-pillar and comprising a rotatable armature and a non-rotatable brushes holder to prevent twisting of the electrical pathway as the lengthy water distributing conduit and associated cable means rotates around said vertical-axis, the improvement comprising:

(a) a confluential vessel attached to and located below the central-pillar assembly journal means;

(b) an upright tubular drive-conduit surrounding said vertical-axis center-pivot and said parallel electrical conductors, said drive-conduit being surrounded by the journal means, the confluential vessel, and the entire upright heighth of the outflow-elbow means and being sealably associated with said outflow-elbow means, the armature portion of the commutator means being attached to the the drive-conduit below said confluential vessel;

(c) the upwardly rising extent of the medial-piping comprising at least two slanting-pipes converging into said confluential vessel, said medial piping further including horizontal portions extending from a lowermost end of the upwardly rising extent to the waterinflow pipe, said horizontal portions diverging from said waterinflow pipe and connected to said medial piping, and at least one medial piping further comprising at least one slanting pipe extending from said waterinflow pipe to said confluential vessel, all said slanting pipes and horizontal pipes providing waterflow communication between said waterinflow pipe and said confluential vessel and providing the support for the journal means thereabove, and all said slanting pipes being wholly laterally offset from said vertical-axis to provide space below the confluential vessel and the outflow-elbow means for the electrical commutation means; and

(d) inter-conduits connection means to cause the drive-conduit and the attached armature to co-rotate with said water distributing conduit around said vertical-axis center-pivot.

4,382,551

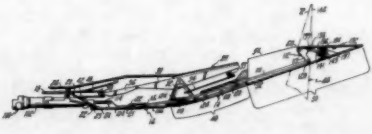
FLAP-TYPE NOZZLE WITH BUILT-IN REVERSER

Edward B. Thayer, Hobe Sound, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 18, 1981, Ser. No. 264,726

Int. Cl.³ F02K *11/60*

U.S. Cl. 239—265.29 **10 Claims**



1. A thrust reverser/exhaust nozzle assembly for a gas turbine engine having an axis comprising:

gas turbine engine exhaust case structure;

first nozzle means including a plurality of axially extending flaps circumferentially disposed about the engine axis and

mounted on said case structure, said flaps being movable between a closed position wherein they define a first exhaust gas flow path having a minimum exit area and an open position wherein they define an exhaust gas flow path having a maximum exit area, each of said flaps including a cutout therethrough; and

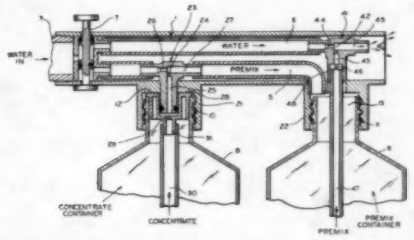
a deflector door attached to each flap and movable between a stowed position wherein said door fits within and closes the said cutout and a deployed position wherein said door extends into the flow path and coacts with deployed doors of adjacent flaps to redirect at least a portion of the flow in an upstream direction through the said cutouts.

4,382,552

LIQUID APPLICATOR

Timothy A. Lubsen, Worthington, and James D. Amerine, Marysville, both of Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Sep. 8, 1981, Ser. No. 299,825
Int. Cl.³ B05B 7/30
U.S. Cl. 239—317 **6 Claims**



1. A liquid applicator for dispensing a chemical in dilute aqueous form comprising in combination

conduit means adapted at one end thereof for connection with a source of water under pressure and at another end thereof for the discharge of said water containing a chemical in dilute aqueous form therein, said conduit means comprising at least two aqueous passageways,

control means at the water source end of said conduit for controlling the flow of water to said aqueous passageways,

at least two containers connected with said conduit means, the first container adapted to contain a concentrated liquid chemical therein, the second container adapted to contain the chemical premixed with water,

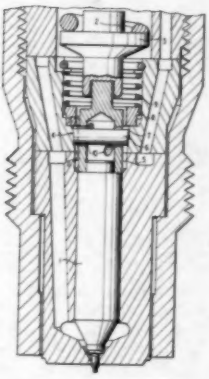
the first passageway of said conduit means leading from said water source to said second container and containing a first stage aspirator therein for withdrawal of liquid from said chemical container, the second passageway leading from said water source to the discharge end of said conduit and containing a second stage aspirator therein for withdrawal of liquid from said premix container, the passageways thereby connecting said containers in series so that concentrated chemical from said first container is premixed with water and passed into said second container and the premix is thereafter further diluted with water and discharged from the applicator.

4,382,553

FUEL INJECTION NOZZLE FOR AN AIR-COMPRESSING INTERNAL COMBUSTION ENGINE

Frank Thoma, Stuttgart, and Kurt Obländer, Kernen i. R., both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Fil. 1 Mar. 11, 1981, Ser. No. 242,613
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009219
Int. Cl.³ F02M 61/20
U.S. Cl. 239—533.9 **7 Claims**



1. A fuel injection nozzle arrangement for an air-compressing internal combustion engine, the arrangement comprising a nozzle needle means having an opening and closing stroke for controlling an injection of fuel, a valve seat means cooperable with the nozzle needle means, and a compression spring means for normally urging the nozzle needle means into engagement with the valve seat means, the nozzle needle means being adapted to be lifted off the valve seat means by a fuel pressure so as to enable a fuel injection, means are provided for rotating the nozzle needle means about a longitudinal axis thereof in a stepwise manner in one direction of rotation by a predetermined rotational angle during each closing stroke of the nozzle needle means,

the rotating means are arranged between the compression spring means and the nozzle needle means, characterized in that the rotating means includes a sleeve means seated on the nozzle needle means, a spring disk means for forming an abutment for one end of the compression spring means is rotatably mounted on the sleeve means, the sleeve means includes mutually opposed guide means for respectively defining oppositely oriented guide paths, a pivot means extends through the sleeve means so as to project from respective sides thereof and is displaceable along said guide means, and in that a clamping cone means cooperates with the respective ends of the pivot pin means in such a manner that the ends of the pivot pin means rests on the clamping cone means when the nozzle means is in a closed position.

4,382,554

FUEL INJECTION NOZZLE CONSTRUCTION

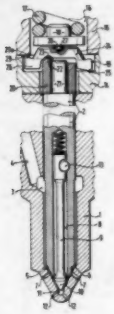
Karl Hofmann, Remseck, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,367

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036583

Int. Cl.³ F02M *61/20*

U.S. Cl. 239—533.9 8 Claims



1. Fuel injection valve for an internal combustion engine, especially a Diesel engine, having

an elongated tubular housing (1) having nozzle openings (7, 12) at one end portion thereof;

a needle valve element (2, 8) longitudinally slidable in the housing and having a valve cone (5) adjacent the nozzle openings;

a closing spring (17) tending to press the needle valve element into closed position, the needle valve being lifted off closed position upon application of pressurized fuel applied through a fuel pressure line sufficient to lift off the valve cone,

and comprising, in accordance with the invention,

means limiting the stroke of the valve element (2) when the pressure in the fuel pressure line is of a first, or low engine power pressure level, lower than a second, or full-load pressure level, including

a plate-like rocker element (19) engaged on one side by the closing spring (17);

a pivot bearing (22) secured to the needle valve and engaging the other side of the rocker element, asymmetrically, with respect to the end portions of the rocker element to subdivide the rocker element into two rocker lever arms (24, 26) of unequal lengths;

a first shoulder (25) formed in the housing and positioned for engagement by the end of the longer one (24) of the rocker arms, at the side remote from the spring;

a second shoulder (29*a*) formed on the housing and positioned for engagement by the end of the shorter one (26) of the rocker arms at the side facing the spring,

initial movement of the needle valve element (2, 8) under the first pressure leaving the longer arm in engagement with the first shoulder of the housing, remote from the spring until, under increased pressure, the shorter arm (26) engages the second shoulder (29*a*) and, upon still increasing pressure, overcomes the lever arm force of the shorter lever arm to tip the shorter lever arm (24) about the pivot bearing (22) to permit further travel of the needle valve element.

4,382,555

DEVICE FOR THE FAST CHANGING OF THE OPERATING METHOD OF SPRAYING UNITS ON WHEELS

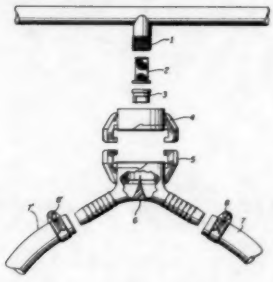
Bruno Ucinhazska, Johannesstrasse 6, 4408 Dülmen; Josef Disteldorf, Am Sengenhoff 2a; Werner Hübel, Am Birnenbruch 34, both of 4690 Herne 1; Siegfried Brandt, Grabenstrasse 8, and Hans-Jürgen Haage, Gausstrasse 13, both of 4690 Herne 2, all of Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,382

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918963

Int. Cl.³ F16L *55/00*

U.S. Cl. 239—714 5 Claims



1. A device for the fast changing of the operating method of field spraying units on wheels for spraying fertilizer and/or pesticides, comprising:

a field spraying unit having at least one socket;

a quick-acting coupling directly connected with the socket and including one coupling part which is a screw cap, said coupling being connected to said socket at said one coupling part;

a universal nozzle and a prefilter carried by said one coupling part;

at least two different second coupling parts for two different fluids, said two different coupling parts being alternately releasably connected with said one coupling part; and

an attachment unit for fluid distribution connected with each said second coupling part, whereby a second coupling part for a first fluid may be rapidly swiched for a second coupling part for a second fluid.

4,382,556

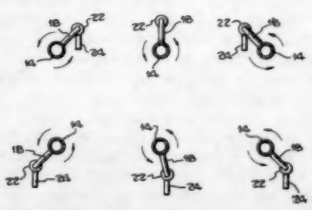
SIDE WHEEL ROLL LEVELING DEVICE

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, Minneapolis, Minn.

Filed May 15, 1980, Ser. No. 149,894

Int. Cl.³ B05B *15/08*

U.S. Cl. 239—715 13 Claims



1. In a rollable sidewheel irrigating device of the type having an axle horizontally disposed and attached to two vertically disposed circular supports, an irrigation conduit connected to a source of irrigating fluid and extending perpendicularly from

said axle, a gravity-biased sprinkler conduit rotatably connected to said irrigation conduit, and a sprinkler head connected to said sprinkler conduit and biased by the force of gravity to a position perpendicular with the ground, the improvement comprising:

fluid pressure activated means, disposed between said irrigation and sprinkler conduits, for permitting rotative movement of said sprinkler conduit relative to said irrigation conduit as said device is rolled into position prior to the entry of irrigating fluid into said device, and for locking said sprinkler conduit relative to said irrigation conduit for preventing said rotative movement when irrigating fluid of sufficient pressure enters said device, thereby maintaining said perpendicular orientation of said sprinkler head relative to the ground, wherein said fluid pressure activated means comprises:

(a) means for permitting sufficiently free rotative movement of said sprinkler conduit prior to the entry of irrigating fluid to the device such that the force of gravity on the sprinkler conduit and sprinkler head is alone sufficient to maintain said perpendicular orientation of said head, whereby an additional counterweight on the sprinkler conduit or head is not required; and

(b) means for locking said sprinkler conduit relative to said irrigation conduit after irrigating fluid enters the device with a locking force sufficiently large such that the locking force by itself resists any forces arising from operation of the sprinkler head tending to rotate the sprinkler conduit relative to the irrigation conduit.

4,382,557

METHOD AND APPARATUS FOR DE-AERATING VISCOUS MIXING STOCK

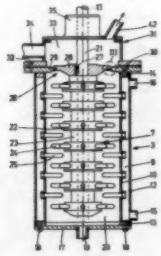
Herbert Duerr, Viernheim, Fed. Rep. of Germany, assignor to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 150,221

Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921408

Int. Cl.³ B02C *19/00*

U.S. Cl. 241—1 **12 Claims**



1. A method for de-aerating viscous stock, especially pasty paint, comprising the steps of:

grinding said stock in a grinding chamber where said stock is not subject to vacuum pressure;

providing an exit slot for said stock from said grinding chamber into a discharge chamber,

providing vacuum pressure in said discharge chamber, and

configuring said exit slot such that it prevents the vacuum pressure from entering said grinding chamber; said slot forming said stock into a layer as it exits said grinding chamber; it said slot being defined by a pair of surfaces and progressively increasing in traverse width moving from said grinding chamber to said discharge chamber; about an axis moving at least one of said surfaces during grinding and said surfaces are both inclined radially outwardly of said axis of said motion of said slot defining surfaces.

4,382,558

ROLLER MILL

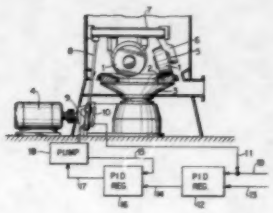
Sven O. Svensson, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Mar. 19, 1980, Ser. No. 131,870

Claims priority, application United Kingdom, Mar. 19, 1979, 7909564

Int. Cl.³ B02C *4/00*

U.S. Cl. 241—30 **12 Claims**



1. A method for maintaining the thickness of a grinding cushion of a roller mill at a substantially constant predetermined value, the roller mill having means for producing a mean grinding pressure and means for monitoring a mean thickness of the grinding cushion, comprising monitoring the mean thickness of the grinding cushion, continuously increasing the mean grinding pressure within a predetermined range as long as the mean thickness of the grinding cushion exceeds said predetermined value and until the thickness of the grinding cushion has returned to said predetermined value, and continuously decreasing the mean grinding pressure within said range as long as the mean thickness of the grinding cushion is less then said predetermined value and until the thickness of the grinding cushion has returned to said predetermined value.

4,382,559

DEFIBRATOR

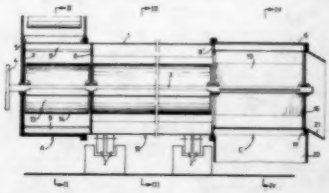
Enar V. Hellberg, Brussels, Belgium, assignor to Sunds Defibrator Aktiebolag, Sundsvall, Sweden

Filed Nov. 17, 1980, Ser. No. 210,387

Claims priority, application Belgium, Nov. 19, 1979, 198187

Int. Cl.³ B02C *13/13*

U.S. Cl. 241—79.3 **16 Claims**



1. A defibrator comprising at least one rotary cylindrical drum provided on its inner surface with longitudinal deflectors, driven in rotation and axially supplied with material which is to be defibrated, including, on the inside, a rotor consisting of a shaft coaxial with the cylindrical drum and longitudinal blades branching off radially from the shaft, and having ends curved in the direction of rotation, which are adapted to receive material to be defibrated and projecting it on to the inner wall of the drum.

4,382,560

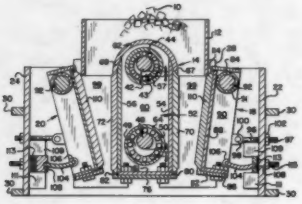
ROCK CRUSHING MACHINE WITH DUAL CAM SHAFT JAW DRIVING MECHANISM

Nicolle A. Toole, 1235 SW. 2nd Ave., Ontario, Oreg. 97914

Continuation-in-part of Ser. No. 5,726, Jan. 23, 1979, Pat. No. 4,248,390. This application Oct. 20, 1980, Ser. No. 198,307

Int. Cl.³ B02C *9/00*

U.S. Cl. 241—101.2 16 Claims



1. A rocker crusher comprising:

a movable jaw; a stationary jaw; and a drive mechanism including

rotatable drive cam shaft means extending transversely through and mechanically coupled to the movable jaw and oscillating cam shaft means extending transversely through and mechanically coupled to the movable jaw.

4,382,561

VERTICAL ROLLER MILL

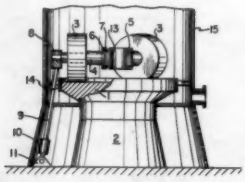
Knud T. Andersen, and Erik C. P. Christensen, both of Copenhagen, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Feb. 3, 1981, Ser. No. 231,262

Claims priority, application Denmark, Feb. 18, 1980, 690/80

Int. Cl.³ B02C *15/00*

U.S. Cl. 241—121 12 Claims



1. A roller mill comprising a grinding table adapted for rotation about a vertical axis, at least two grinding rollers, at least two stationary generally horizontally mounted roller shafts each having an inner end portion positioned adjacent the vertical axis and an outer end portion, each grinding roller being adapted for rotation on a respective shaft, means for pressing the grinding rollers against the grinding table, a frame positioned centrally of the grinding table, said roller shafts being secured to said frame at their inner end portions and said pressing means being pivotally coupled to the outer end portions of the roller shafts.

4,382,562

FINGER BRAKE FOR A SPINNING REEL AND METHOD OF ASSEMBLING SAME

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,926

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 A 10 Claims

1. In a closed face spinning reel,

a front spinner head,

a body having a deck plate with a center passageway in the deck plate defining a central axis,

a center shaft having a center section mounted for longitudinal movement in the center passageway and having

a front section projecting forward of the deck plate with means for mounting and securing said spinner head thereto,

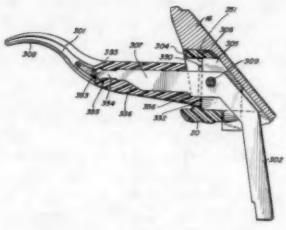
a rear section projecting rearward of the deck plate,

spring means urging the center shaft and spinner head in a rearward direction to a line winding position, and

a brake lever actuable to move said shaft and spinner head forward to casting and brake positions, the improvement comprising:

a brake lever finger grip portion,

a brake lever bellcrank portion with two legs, joined with said finger grip portion along one leg of said bellcrank,



said brake lever finger grip portion is a molded plastic part,

mounting means in said bellcrank, pivotally mounting the brake lever on said body with the other of said legs of the bellcrank extending into proximity with the rear end of the center shaft and engageable therewith upon pivotal movement of the bellcrank; and

resilient means for urging said lever to a stop position with the end of said other leg out of contact with said center shaft for minimizing rattling of said lever in the reel and for locating said finger grip in a uniform position after each release of said lever, said resilient means comprises a flexible element molded integrally with said finger grip portion.

4,382,563

SEAT BELT WINDING AND RETRACTING APPARATUS

Masayuki Morita, Tokoname; Takashi Kawaharazaki, Ichinomiya, and Toshiaki Shimogawa, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 787,534, Apr. 14, 1977, which is a continuation of Ser. No. 656,850, Feb. 10, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 831,046

Claims priority, application Japan, Feb. 18, 1975, 50-20673; Aug. 9, 1975, 50-96771; Aug. 9, 1975, 50-96775; May 18, 1977, 52-57172

The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.

Int. Cl.³ A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107 4 Claims

1. A seat belt winding and retracting apparatus comprising:

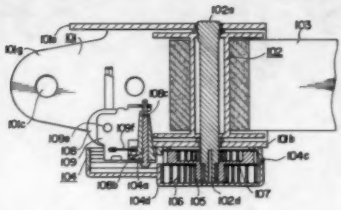
a frame,

winding-up spring means connected to said frame and including first and second springs,

a winding reel supported rotatably on said frame and operatively connected to said spring means so that said winding reel can wind up thereon the seat belt under influence of at least one of said first and second springs,

coupling means operatively connected between said first and second springs for changing between coupling and uncou-

pling states to thereby change seat belt winding force influenced by said first and second springs, and means for actuating said coupling means,



whereby force for winding up said seat belt is varied in dependence upon the states taken by said coupling means.

4,382,564

ACCELERATION SENSOR

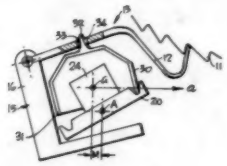
Malcolm B. James, Sherriffs Rd., Lonsdale, State of South Australia, Australia

Filed Feb. 13, 1981, Ser. No. 234,182

Claims priority, application Australia, Feb. 19, 1980, PE2437

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **10 Claims**



1. An acceleration sensor which is useful for lifting a pawl into a locking position in engagement with a toothed wheel on a seat belt retractor comprising:

a frame,

a pawl carried by the frame and movable with respect to the frame between a wheel engaging position and a wheel disengaging position,

a driver below the pawl, universal pivot means on the frame constraining the driver for tilting movement only with respect to the frame, the centre of gravity of said driver being above said universal pivot means so that said driver tends to topple about said pivot means,

a lifting surface on said driver, which lies in a lifting plane until said driver tilts, surrounding the effective pivotal point of the universal pivot means and below the centre of gravity of the driver, said universal pivot means inhibiting rotation of said driver in said plane, and

a yoke having a lower end engaging the lifting surface, and means retaining the upper end of the yoke in engagement with the pawl, so that tilting of said driver lifts said lifting surface which in turn lifts said yoke, such that said yoke lifts said pawl and moves said pawl into said wheel engaging position.

4,382,565

MAGNETIC TAPE CASSETTE

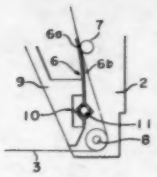
Haruo Shiba, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 229,016

Claims priority, application Japan, Mar. 25, 1980, 55-39895[U]

Int. Cl.³ B65H *23/04*; G11B *15/32*

U.S. Cl. 242—199 **3 Claims**



1. A tape biasing element for a magnetic tape cassette enclosing a magnetic tape movably held in a casing, said tape biasing element comprising a unitarily formed single molded element including a spring portion and a tape contacting portion, said tape biasing element being formed of a resilient material comprising high density polyethylene blended with carbon,

whereby said unitarily formed element provides both the resiliency necessary for said spring portion and the low friction necessry for said tape contacting portion.

4,382,566

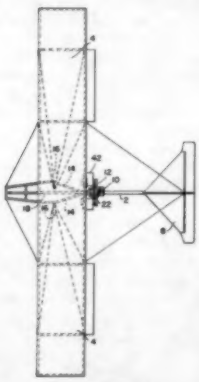
LIGHTWEIGHT AIRCRAFT

Rolf Brand, 212 N. Mecklenburg Ave., South Hill, Va. 23970

Filed Dec. 5, 1980, Ser. No. 213,458

Int. Cl.³ B64D *27/00*; B64C *1/16*

U.S. Cl. 244—13 **13 Claims**



13. A lightweight aircraft comprising:

a longitudinally disposed, principal longitudinal load-carrying member,

a wing structure mounted on said load-carrying member,

a rudder and elevator assembly mounted on said load-carrying member aft of said wing structure,

a propeller means mounted on said load-carrying member for rotation about a longitudinal centerline of said load-carrying member, said propeller means being disposed between said wing structure and said rudder and elevator assembly,

a bearing seat mounted on said load-carrying member,

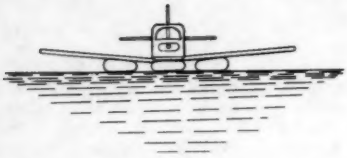
a bearing means mounted on said bearing seat, said propeller means being rotatably mounted on said bearing means,
said bearing seat including a bracket section,
at least one engine mounted on said bracket section,
a connecting means drivingly connecting said engine to said propeller means, and
a vibration dampening means disposed between said bearing seat and said load-carrying member.

4,382,567

SAFETY FLOTATION DEVICE FOR AIRCRAFT

Victor L. Fredericks, and Muriel E. Bray, both of Box 206, Old Chester Rd., Goshen, N.Y. 10924

Filed Jan. 22, 1981, Ser. No. 227,380
Int. Cl.³ B64C *25/56*
U.S. Cl. 244—107 **5 Claims**



1. The combination with an aircraft of a plurality of inflatable flotation devices attached to the underside of said aircraft for supporting said aircraft in a body of water; said aircraft having a fuselage and wings attached thereto with said wings extending transversely from said fuselage; the underside of said fuselage and said wings is spaced from a horizontal plane that is parallel to the surface of said body of water in such a manner that the height between said underside and said horizontal plane varies in both transverse direction and in the fore and aft direction of said wings; said plurality of flotation devices are stored in a normally deflated condition in compartments adjacent to the underside of said fuselage and said wings and when inflated the upper surface of said flotation devices is contiguous to the underside of said aircraft and the cross sectional shapes of each said flotational device varies in height in both said transverse and fore and aft directions such that the lower surfaces of said flotation devices are parallel to said horizontal plane, whereby the flotation devices support the entire aircraft in a horizontal attitude substantially out of the water; said compartments each having a streamlined door means thereon which is pivoted about a hinge means parallel to said fore and aft directions and which is held in a closed position by latch means; said latch means comprising pull pins which are actuated by a cable; said flotation devices are inflated from a valve controlled source of pressurized gas which is also actuated simultaneously by said cable when said pull pins are released; said flotation devices are secured to the underside of said aircraft by shock cords when said flotation devices are inflated and released from said compartments.

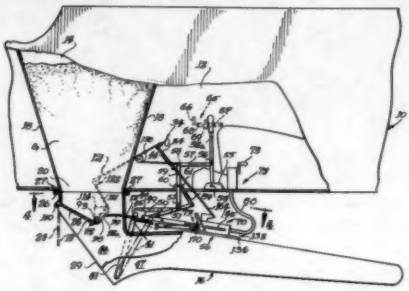
4,382,568

AIRPLANE SPREADER APPARATUS

Robert O. Schertz, R.R. #1, El Paso, Ill. 61738

Filed Mar. 24, 1980, Ser. No. 133,581
Int. Cl.³ B64D *1/16*
U.S. Cl. 244—136 **8 Claims**

4. For use in a crop dusting plane having a hopper with an outlet leading to a spreader, a discharge gate closing the outlet and control means to be operated by the pilot from the plane cockpit for moving the discharge gate for selectively opening and closing the outlet; the combination with said discharge gate of stop means disposed adjacent the discharge gate but spaced therefrom in the direction of gate movement in moving from the closed position to the opened position; said stop means including a frame secured relative to the hopper and spreader and a movable member mounted within the frame and presenting a free board end adjacent the discharge gate; metering control means located in the cockpit to be operated by the pilot therein, and linkage means connected between the movable member and the metering control means operable upon actuation of the latter to shift the former closer to or further



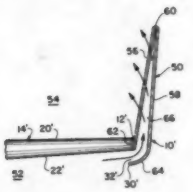
from the discharge gate, whereby the adjusted movable member of the stop means is engaged by the discharge gate means to accurately limit the extent of the opening of the outlet, and emergency release control means being located in the cockpit to be operated by the pilot therein, and linkage means connecting this control means to the stop means to disengage the stop means upon actuation of the control means.

4,382,569

WING TIP FLOW CONTROL

Charles W. Boppe, Farmingdale, and Stuart G. Harvie, Bay Shore, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,717
Int. Cl.³ B64C *23/00, 21/02*
U.S. Cl. 244—199 **4 Claims**



1. In a fluid foil having a span with a root at one end and a tip at the other end thereof, said foil generating lift when moved with relative motion through a fluid, said motion inducing variations in pressure on said foil with the tip end producing an associated drag-inducing vortex flow therearound due to the crossflow moving outwardly with respect to the root from the higher pressure surface of the foil toward the lower pressure surface thereof, the improvement comprising, in combination, crossflow capture means at said foil tip, said capture means having a flow intercepting surface comprising a curved capture surface extending at least across the chord of said foil tip and from the upper surface of said foil to below the lower surface thereof, the lower edge of said surface extending inboard of said foil tip, with the concave side of said capture surface facing said foil root and forming a crossflow capture inlet, and aspirating means for removing crossflow captured by said capture surface for venting at a location away from said capture flow inlet, said aspirating means consisting of a fluid stub foil fixedly mounted on the tip of the fluid foil on the low pressure surface side thereof, the flow of fluid over said foil and stub foil generating regions of higher and lower pressures

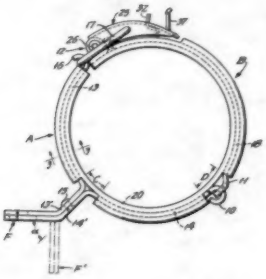
on the surfaces thereof, a slot in said stub foil surface opening on to a low pressure region thereof, a fluid passageway connecting said slot to the crossflow capture inlet such that said slot aspirates the crossflow intercepted by the curved capture surface whereby the crossflow intercepted and removed by said capture and aspirating means weakens the tip vortex core strength to thereby reduce lift-induced drag on said fluid foil.

4,382,570

DRAW BAND LINE SUPPORT

John L. Craig, Ona, W. Va., assignor to Transamerica DeLaval Inc., Princeton, N.J.

Filed Jul. 1, 1981, Ser. No. 279,317
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—74 R **16 Claims**



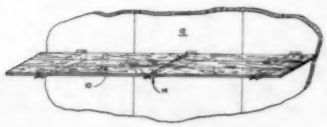
1. A draw-band line support comprising two cylindrically arcuate metal bands having articulated connection at one end of their adjacent ends and coacting tension-clamp connecting means releasably interconnecting their other adjacent ends, radially outward mounting-bracket structure on one of said bands, and a single continuous liner of flexible resilient material of generally C-shaped section with retaining flanges retained to both bands, said liner extending circumferentially continuously within said bands from and between said other ends thereof, said liner continuously spanning the region of articulated connection, there being a short discontinuity of said flanges at the region of band articulation, and being adapted to accommodate an articulated opening of said bands to at least the extent of the diametral span of the bands when said other ends are releasably clamped.

4,382,571

SCAFFOLD BRACKET AND HANGER THEREFOR

David J. Horen, 636 Kings Grant Rd., Virginia Beach, Va. 23452

Filed Dec. 22, 1980, Ser. No. 218,978
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—235 **10 Claims**



1. A scaffold bracket for the curved steel wall of a ship or the like, comprising:

a support beam having a U-shaped cross-section and tapering in width from end to end;

a support plate having a pair of key-hole slots positioned in spaced relationship in a horizontal plane;

said support beam being rigidly secured at its widest end to said support plate a distance inward of its periphery with the widest end circumscribing said key-hole slots;

said slots in said plate being positioned below and in close proximity to the top flange of said support beam;

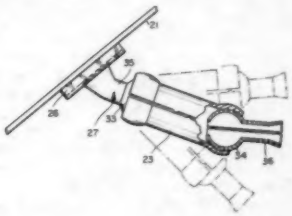
pairs of parallel steel studs welded to the curved steel wall of the ship for supporting said support U-beam and support plate against said wall whereby a plurality of planks forming a platform for supporting workers and equipment may be supported on said support U-beam and studs whereby workers may perform work on the curved said wall of said ship.

4,382,572

MOUNTING APPARATUS FOR REAR-VIEW MIRRORS AND THE LIKE

William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356

Filed Jan. 21, 1981, Ser. No. 226,622
Int. Cl.³ B60R *1/02*
U.S. Cl. 248—484 **6 Claims**



1. A mounting apparatus for attaching a first object to a second object comprising:

an inserting member having a first end adapted for attachment to a first object and a second, opposite end having a hollow, generally conical shape; and

a receiving member having a first surface adapted for attachment to a second object and a second, opposite surface defining therein a longitudinally extending receiving channel w hich tapers in the longitudinal direction such that its lateral width decreases, said receiving channel having undercut longitudinal edges, said tapered receiving channel including a bottom surface intermediate between said first and second surfaces and being adapted such that the undercut longitudinal edges slidably receive, in the direction of narrowing taper said second, opposite end and engage said second opposite end at two primary areas of interference contact, said inserting member and said receiving member being cooperatively adapted such that continued advancement of said inserting member in the direction of narrowing taper increases the interference contact at said two primary areas and forces said inserting member against said bottom surface into engagement at two additional primary areas of interference contact which are spaced from said first two primary areas.

4,382,573

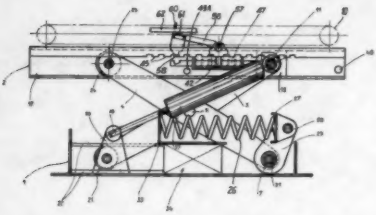
VEHICLE SEAT SUPPORT WITH INCORPORATED DEVICE FOR DAMPING LONGITUDINAL ACCELERATION

Bernard Aondetto, Nogent sur Marne, France, assignor to Sable Freres International, Pantin, France

Filed Nov. 20, 1980, Ser. No. 208,510
Claims priority, application France, Nov. 27, 1979, 79 29130
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 **11 Claims**

1. Vehicle seat support comprising: an upper chassis intended to receive a seat, support means for mounting said upper chassis on a vehicle, said upper chassis being longitudinally movable with respect to said support means, means for

elastic damping of said upper chassis in the longitudinal direction, and means for fixing the mean longitudinal position of said upper chassis in relation to said support means; said elastic damping means being constituted by a first rigid element which is fixed in the longitudinal direction with one of the two structure elements constituted by said upper chassis and said support means, two second rigid element fixed in the longitudinal direction with the other of said two structure elements, said first rigid element being situated between said two second rigid



elements, two elastic elements interposed between said first rigid element and said two second rigid elements respectively; said means for fixing the mean longitudinal position of said upper chassis in relation to said support means comprising a longitudinal toothed rack fixed with said upper chassis, and side pieces fastened with one of said rigid elements of said elastic damping means and engageable with said toothed rack to effect a longitudinal connection between said upper chassis and said support means through the intermediary of said elastic damping means.

4,382,574

MOTOR MOUNT FOR CANOES

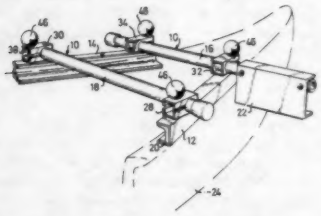
Everett Ellestad, Skäcklingevägen 57, S-14700 Tumba, Sweden

Filed Dec. 2, 1980, Ser. No. 212,258

Claims priority, application Sweden, Dec. 7, 1979, 7910086

Int. Cl.³ F10M *1/00*

U.S. Cl. 248—641 **1 Claim**



1. A motor mount designed to be affixed to the outwardly or inwardly projecting gunwales of a wide variety of canoes, comprising two side rails and two crosspieces that together form a framework that can be affixed to a canoe wherein the side rails comprise two U-shaped members of equal length provided with elastic linings that can be attached to the outside of outwardly projecting gunwales or to the inside of inwardly projecting gunwales; each U-shaped side rail having at each end portion a rotatable clamping device having its axis of rotation perpendicular to the top and bottom flanges of the U-shaped side rails; the crosspieces consisting of front and rear members that can be slid through and/or clamped tight in said clamping devices, so that the U-shaped side rails and the crosspieces form a frame-work that has two opposite sides with the same length between their respective clamping devices and two sides formed by the crosspieces between the clamping devices that can be freely varied in length by sliding said crosspieces through said clamping devices; the end of one of the crosspieces being located outside the nearest clamping device and carrying a motor mounting on which to mount a propulsion motor, said framework being foldable together so that the U-shaped side rails and the crosspieces lie close to each other.

4,382,575

WEDGE SHAPED CHUTE WALLS WITH BENT ENDS FOR CIGARETTE MAGAZINES

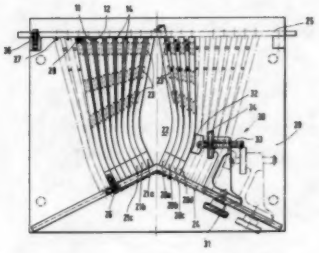
Heinz Focke, Verden, and Bernhard Focke, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Division of Ser. No. 23,916, Mar. 26, 1979, Pat. No. 4,279,955. This application Feb. 25, 1981, Ser. No. 238,278

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814166

Int. Cl.³ B22D *5/00*

U.S. Cl. 249—93 **7 Claims**



1. A mold apparatus for manufacturing chute wall partitions (10) for forming chambers within a cigarette magazine hopper, each partition comprising a pair of outer metal sheets (11, 12) disposed in an elongated V configuration and bonded (13) together at their converging ends, and a hardened spacer composition (14) filling the remaining wedge-shaped volume between the diverging, facing inner surfaces of the sheets, said apparatus comprising:

(a) a holding jig including a planar base plate (29), a support plate (24) secured to and upstanding from said base plate, and a counter plate (25) secured to and upstanding from said base plate and spaced from said support plate,

(b) a plurality of pattern plates (20, 21) each having a pair of opposite faces, and each face being differently configured to correspond to an outer shape of a chute wall partition to be formed thereby,

(c) means for individually releasably mounting each of said pattern plates at opposite ends thereof to and between said support plate and counter plate and against said base plate in at least one diverging group such that a plurality of wedge-shaped spaces are defined between adjacent ones of said pattern plates each corresponding to the overall shape of a desired chute wall partition, and

(d) means for individually temporarily securing the outer metal sheets to the faces of said pattern plates, whereby softened spacer composition and bonding material may be appropriately introduced between respective pairs of metal sheets to thereby form said chute wall partitions.

4,382,576

INGOT MOLD

Glenn W. Hanna, 1441 Wightman St., Pittsburgh, Pa. 15217

Filed Feb. 17, 1981, Ser. No. 235,152

Int. Cl.³ B22D *7/06*

U.S. Cl. 249—174 **3 Claims**

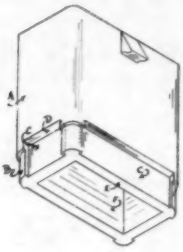
1. An improved ingot mold, having vertical faces with vertical corner edges there between, and a reinforcing band placed

around the mold over the vertical forces and the vertical corner edges; the improvement which comprises:

each face of said mold having at least one vertical recess defined therein, each recess being at approximately the same latitude and of a height greater than the width of the reinforcing band used to reinforce and repair said mold,

each recess being separated from adjacent recesses by a less recessed portion defined in

each vertical corner edge, said less recessed portion being located therein at approximately the same latitude as the recesses in the faces of said mold, each less recessed portion being of a depth at least as great as the thickness of the reinforcing band, and of a height at least as great as the width of said reinforcing band;



the reinforcing band being placed around the mold over the face recesses and the less recessed portions, contacting the mold only at the less recessed portions, thereby reducing heat conduction to said reinforcing band, said reinforcing band not protruding outward beyond the vertical corner edges of the mold, thereby protecting said band from damage should the corner edges of said mold contact another object.

4,382,577

SHUT-OFF VALVE FOR LIQUID OR GASEOUS FLUIDS

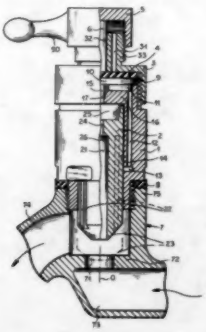
Josip Bregovic, Vramceva 17, YU-41000 Zagreb, and Josip Valic, Krizni rat 37, YU-58450 Hvar, both of Yugoslavia

Filed Jun. 5, 1981, Ser. No. 270,865

Claims priority, application Yugoslavia, Jun. 11, 1980, 1558/80

Int. Cl.³ F16K *31/383*

U.S. Cl. 251—43 **8 Claims**



1. A shut-off valve for controlling the flow of a fluid between two conduits, comprising:

a housing with an inlet port and an outlet port respectively connectable to said conduits, said ports being separated in said housing by a partition having an aperture positioned to be traversed by the fluid from a first side to a second side;

a plunger guided in an extension of said housing on said second side of said partition, said plunger having an extremity partly receivable in said aperture for fluidically isolating said ports from each other in a cut-off position, said plunger further having a throughgoing axial bore with an internal constriction;

a transverse wall in said extension beyond said plunger, said wall having a passage in line with said bore opening into a space beyond said wall, said space communicating with said outlet port via a bypass independent of said aperture including at least one channel in said extension and a set of external flutes on said plunger which open onto said extremity outside the circumference of said aperture whereby incoming fluid entering said bore from said inlet port through said aperture and reaching said outlet port by way of said channel creates a pressure differential across said internal constriction tending to move said plunger off said partition and establishing a direct connection between said ports; and

blocking means in said space operable to throttle said passage for allowing a return of said plunger to said cut-off position by a hydraulic pressure permanently acting thereon.

4,382,578

MAGNETICALLY ACTUATED RISING STEM VALVE

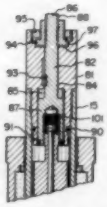
Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Division of Ser. No. 39,899, May 17, 1979, Pat. No. 4,274,444.

This application Aug. 4, 1980, Ser. No. 174,805

Int. Cl.³ F16K *31/11*

U.S. Cl. 251—65 **1 Claim**



1. A valve comprising

a pressurizable valve body defining an annular valve seat, an inlet fluid passage in communication with one side of the valve seat and an outlet passage in communication with the other side of the valve seat, and a valve actuator passage extending away from the valve seat,

a nonmagnetic tubular pressurizable bonnet having an extending axis passing through the space circumscribed by the annular valve seat and in direct fluid communication with the passages in said valve body,

the end of the said bonnet away from the valve seat comprised of inner and outer coaxial plugs being axially movable relative to each other, said outer plug being threadably secured to the bonnet, a pressure seal between said plugs, means for preventing relative rotation between said plugs, a threaded axial bore in said inner plug opening to the interior of the bonnet,

a cylindrical holder coaxial with and surrounding said tubular bonnet, said holder mounted rotatable thereto, said holder carrying rare earth cobalt magnets defining an even number of north and south poles,

a driven magnet assembly carrying rare earth cobalt magnets defining an even number of north and south poles rotatably supported in the bonnet,

a valve stem in the valve actuator passage threadably engaging the bore in said inner plug,

a valve closure element fixed to said valve stem which when engaged in said valve seat prevents flow between the inlet and outlet passages,

means for keying the valve stem to the driven magnet assembly such that rotation of the driven assembly rotates the stem and the stem moves into or out of the bore in said inner plug,

whereby under normal conditions rotation of said driven magnet assembly in one direction raises the valve stem and rotation of said driven magnet assembly in the other direction lowers the valve stem, and

means external to said bonnet attached to said inner plug for actuating axial movement of the valve stem by relative movement between said inner and outer plugs whereby under abnormal conditions the valve stem may be raised or lowered.

4,382,579

SAFETY LOCKING ARRANGEMENT

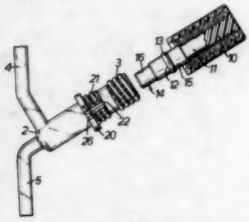
Lawrence J. Morris, Trentham, England, assignor to Corning Limited, Sunderland, England

Filed Nov. 2, 1981, Ser. No. 317,277

Claims priority, application United Kingdom, Mar. 10, 1980, 8007977

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—214 **13 Claims**



1. A valve for the control of fluid flow, comprising a valve body having a valve seat with a flow passage passing through the seat and a valve closure member located within the body, which valve closure member is adapted to engage the seat to effect closure of the valve, the valve closure member being carried by a cap adapted to enter into screw-threaded engagement with the valve body at a mouth region thereof, wherein the cap enters into screw-threaded engagement with an annular retaining means disposed externally around and formed separately from the valve body, said retaining means being captured by said cap and caused to move with said cap axially along said valve body in response to movement of said cap, and the valve body is so formed in said mouth region that the retaining means and cap may is not able to be withdrawn therefrom by just rotation or displacement lengthwise of the valve body when the valve closure member is in its fully open position.

4,382,580

LIFTING AND SHIFTING APPARATUS

Karl A. Hellander, Gothenburg, Sweden, assignor to Handelsbolaget Rodoverken, Gothenburg, Sweden

PCT No. PCT/SE80/00106, § 371 Date Dec. 11, 1980, § 102(e) Date Nov. 17, 1980, PCT Pub. No. WO80/02172, PCT Pub. Date Oct. 16, 1980

PCT Filed Apr. 11, 1980, Ser. No. 224,510

Claims priority, application Sweden, Apr. 11, 1979, 7903236

Int. Cl.³ B21D *39/03*

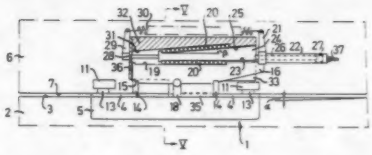
U.S. Cl. 254—89 H **11 Claims**

1. An apparatus for lifting and substantially linearly displacing or shifting an upper body (6) in relation to a lower body (2), particularly for lifting and shifting the upper sweep portion (6) of a cistern in relation to its lower sweep (2) in the construction of a cylindrical cistern, comprising

(a) a support member (1) resting against said lower body (2) and having an upwardly facing track (19) extending substantially horizontally in the direction of the shifting motion;

(b) a lift member (32) for coaction with said upper body (6) having a downwardly facing track (31) sloping forwardly and downwardly in the direction of the shifting motion, said lift member (32) being movable vertically as well as in the direction of the shifting motion in relation to said support member (1);

(c) a shift member (24) movably arranged with respect to said support member (1) and lift member (32) and comprising two tracks (23,25), each arranged parallel to, and coacting with the respective one of said tracks (19,31);



(d) a shifting mechanism (22,30), acting between said support member (1) and shift member (24), for imparting to said shift member (24) reciprocating motion relative to said support member (1);

(e) means (β) which, under a first phase (b) of the forward travel of the shift member (24) in the shifting direction of said upper body (6), prevents said lift member (32) from participating in this movement, whereby the lift member is given a lifting movement (c); and

(f) means (36) for also shifting said lift member (32) under continued motion (d) forwards of said shift member (24) and during return motion of said shift member (24) to shift said lift member (32) only during a terminating portion of its movement, whereby said lift member is first allowed to lower said upper body (6) in its shifted position.

4,382,581

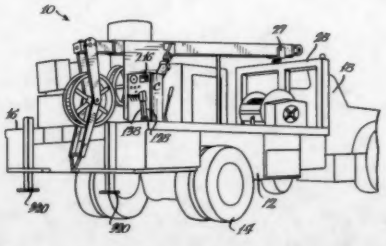
APPARATUS FOR PULLING CABLE THROUGH UNDERGROUND CONDUIT

Delbert W. Wimer; Daniel C. Carlson, both of Lake Worth; Edward C. Elwood, Margate, and Eugene T. Stewart, Tavernier, all of Fla., assignors to Burnup & Sims Inc., Plantation, Fla.

Filed Jun. 20, 1980, Ser. No. 161,286

Int. Cl.³ B23Q *3/08*

U.S. Cl. 254—134.3 FT **6 Claims**



1. A feeding device for feeding a line through an underground conduit comprising a pressurized pneumatic fluid

source, an elongated hollow tubular member having an expansible element on one end adapted to be expanded into engagement with said underground conduit, means defining a guide slot from the periphery of said tubular member for guiding said line into said tubular member, a hinged door portion on said tubular member defining a portion of said guide slot and pivotable between open and closed positions for inserting said line into said guide slot, a mandrel adapted to be attached to said line and positioned in said underground conduit, a collar slidable on said tubular member and adapted to expand said expandable element into engagement with said underground conduit, said collar holding said door in a closed position when in a position to expand said expandible element, and means for connecting said pressurized pneumatic fluid source to an opposite end of said tubular member to propel said mandrel and line through said underground conduit.

4,382,582

AIR BLAST SLAG CUT OFF DEVICE FOR STEEL CONVERTER

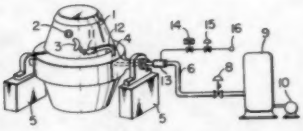
Masahiko Seki, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,339

Claims priority, application Japan, Mar. 10, 1981, 56-32296[U]

Int. Cl.³ C21B 7/12

U.S. Cl. 266—45 **3 Claims**



1. An air blast type slag cut-off device for steel converter, having a nozzle for jetting a pressurized gas toward the tap hole of said steel converter thereby to force the slag tending to accompany the molten steel back into said steel converter, said device comprising: a shut-off valve disposed in a high-pressure gas pipe to which said nozzle is connected, said shut-off valve being arranged in the close proximity of said nozzle and substantially mounted on said steel converter; an operating fluid supply pipe connected at its one end to said shut-off valve and at its the other end to a pipe leading from the source of an operating fluid for operating said shut-off valve; and a rotary joint for connecting said operating fluid supply pipe and said high-pressure gas pipe to respective sources and provided on the trunnion shaft of said steel converter and adapted to permit said steel converter to be tilted smoothly while maintaining fluid communication between said pipes and respective sources, whereby the time lag of jetting of said pressurized fluid from said nozzle can be prevented.

4,382,583

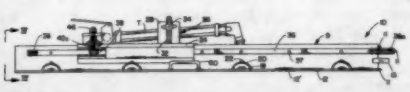
GEAR AND RACK PORTABLE TORCH DRIVE

Franklin W. Domres, 4117 Crescent Beach Rd., Manistee, Mich. 49660

Filed Feb. 18, 1981, Ser. No. 235,530

Int. Cl.³ B23K 7/10

U.S. Cl. 266—77 **5 Claims**



1. A portable torch support and guide apparatus comprising: an elongated module including a support base for resting on stock to be cut, and retention magnets on said support base for retaining said support base to said stock;

an upstanding elongated carriage guide track;

a torch mounting carriage movable along said track, and having a drive mechanism for advancing said carriage, said drive mechanism including a drive gear;

a gear rack on said module, being engageable by said drive gear; said gear rack being positioned longitudinally offset on said module with one end of said gear rack extending beyond said guide track at one end of said module; the opposite end of said gear rack being foreshortened on the end of said wide track to define an end space on said guide track, whereby the outwardly extending end of said gear rack overlaps onto the end space of an adjacent module in aligned relation to said elongated module, whereby said drive gear can transfer from said elongated module gear rack to the adjacent module gear rack to advance said carriage from said elongated module to the adjacent module; and

interconnect alignment means for end to end interconnection and alignment of adjacent modules, whereby two or more like modules can be interconnected in an aligned relationship.

4,382,584

SHAFT FURNACE AND A METHOD FOR THE OPERATION OF THE SHAFT FURNACE FOR THE MELTING DOWN OF NON-FERROUS METALS IN A RECYCLING PROCESS, PARTICULARLY FOR THE MELTING DOWN OF LEAD

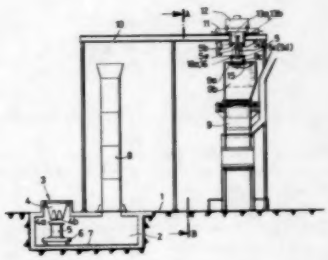
Werner Liedtke, Wesel, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,332

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023253

Int. Cl.³ F27B 1/20

U.S. Cl. 266—142 **6 Claims**



1. A shaft furnace apparatus for use in connection with the recycling of non-ferrous metals, comprising:

(a) a shaft furnace having an inlet;

(b) a crane runway located directly above said shaft furnace inlet, said crane runway having a loading station position and an unloading station position;

(c) said unloading station position being located directly above said shaft furnace inlet;

(d) a carriage movable on said crane runway between said loading station position and said unloading station position;

(e) a sorting container, capable of being transported by said carriage;

(f) a trailer cross arm secured to said carriage for selectively securing and releasing said sorting container from said carriage at said loading station position and unloading station position;

(g) said sorting container being lockable from the top by a cover;

(h) said cover being grippable by said trailer cross arm to effectuate securing and releasing of said sorting container, as desired;
(i) the bottom of said sorting container, when located at said unloading station position, serving to seal, in a gas-tight manner, said shaft furnace inlet;
(j) said sorting container being provided with a bottom sealing edge provided with a selectively opening and closing, downwardly pivoting bottom flap/s/; and
(k) said shaft furnace inlet also being sealable in a gas-tight manner by a sealing flap pivotally located within the interior of said shaft furnace.

4,382,585

COOLING PLATE FOR FURNACES

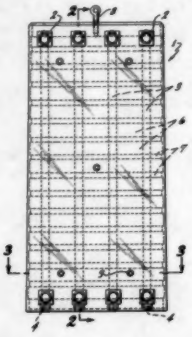
Horst Fischer; Hermann Bünemann, both of Osnabrueck; Bernhard Henneken, Oberhausen, and Bruno Kämmerling, Dinslaken, all of Fed. Rep. of Germany, assignors to Kabel-u. Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,935

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907511

Int. Cl.³ F27D *1/12*

U.S. Cl. 266—190 **16 Claims**



1. A cooling plate for pit furnaces, such as blast furnaces, comprising:
a quadrilateral, forged or rolled single-piece plate made of copper or a low-alloyed copper alloy and being of integral construction;
deep-drilled blind bores, extending from one narrow side through the plate toward the opposite narrow side; and
means on the plate for holding a fireproof material.

4,382,586

METAL COOLING BED FOR CONTROLLING RATE OF COOLING

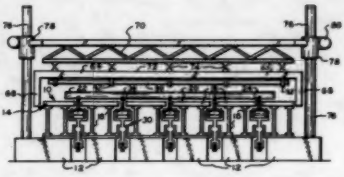
Thurston F. Reese, 3324 McClure Bridge Rd., Diluth, Ga. 30136

Continuation-in-part of Ser. No. 904,858, May 15, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,520

Int. Cl.³ C21D *1/84*

U.S. Cl. 266—259 **4 Claims**

1. Apparatus for controlling the rate of cooling of individual heated metal bars comprising, in combination, a substantially horizontal bed having a bar receiving end, a bar discharge end and lateral sides, said bed including an indexable conveyor extending between said bed ends adapted to receive and support metal bars to be cooled by laterally translating the bars from said bar receiving end to said bar discharge end, conveyor operating means connected to said conveyor for selectively varying the spacing between adjacent bars and varying the rate of movement of said bars across said bed, said bed including a first thermally insulated heat barrier disposed below said conveyor, a second heat transfer control barrier spaced vertically above said conveyor and superimposed over said bed, vertically extending columns located adjacent said bed lateral sides, and adjustable support means supporting said



second barrier upon said columns at an operative predetermined height directly above said bed wherein the height of said second barrier above said bed aids in regulating the rate of heat loss from said bars.

4,382,587

VIBRATION DAMPING ELEMENT

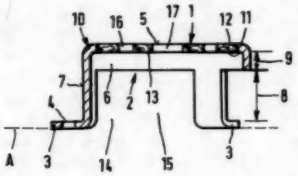
Richard Heinrich, and Rainer Heinrich, both of Heilbronn, Fed. Rep. of Germany, assignors to KACO GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,032

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010686

Int. Cl.³ F16F *7/00*

U.S. Cl. 267—160 **38 Claims**



1. A vibration damping element, especially for motor vehicle installation and damping of highly sensitive electrical and electronic components, comprising:
a damping member of resilient vibration damping material, said damping member being provided with at least one support surface and holding means for directly and immediately supporting said components thereon, said support surface being formed by a completely resilient portion of the surface of said damping member, and said holding means being formed by a resilient portion of said damping member itself; and
at least one fastening part, which has an engagement side for remote fastening said damping element to a vehicle structure, said at least one fastening part being arranged on said damping member though away from said completely resilient portion.

4,382,588

PORTABLE SKI VISE AND SKI RACK

Marko E. Vovk, 2920 Hemlock Dr., Willoughby Hills, Ohio 44094, and Theodore Radisek, 24690 Hawthorn Dr., Euclid, Ohio 44117

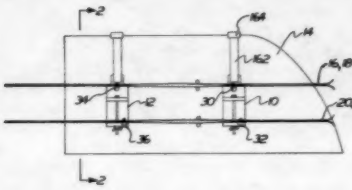
Filed Apr. 7, 1981, Ser. No. 251,768

Int. Cl.³ B60R *9/12;* **B25B** *1/20*

U.S. Cl. 269—43 **4 Claims**

1. A combined ski rack and ski vise comprising a base having a generally planar base member, suction means for attaching said base to a smooth nonporous surface with the plane of said

base member generally parallel to the plane of said smooth surface, vise means connected with said base for releasably gripping a ski by opposite lateral edges to position the bottom of the ski generally parallel to the plane of said base member, an axially extending pin connected with said base and extending generally perpendicular to the plane of said base member, resilient strap means for attaching a ski to said pin with the bottom of the ski generally parallel with the axis of said pin, and strap means connected with said base for restraining said base against vertical movement when said suction means is attached to a generally vertical surface.

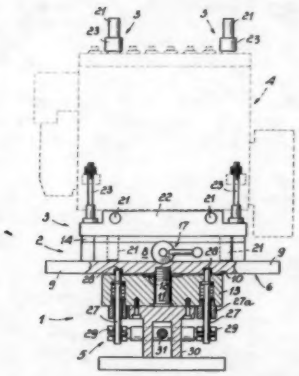


4,382,589

WORKBENCH APPARATUS, PARTICULARLY FOR WORKING ON DIESEL ENGINE INJECTION PUMPS

Ferdinando Cammi, Via Luigi Einaudi, 8 Piacenza, Italy

Filed Aug. 11, 1980, Ser. No. 177,153
Claims priority, application Italy, Sep. 6, 1979, 25524 A/79
Int. Cl.³ B25B 1/22
U.S. Cl. 269—50 **7 Claims**



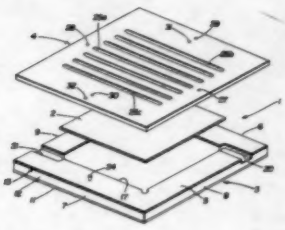
1. A workbench apparatus for working on articles, particularly Diesel injection pumps, comprising a base and means supported by said base for carrying an article to be worked on, said means comprising at least one connection element having article supporting members for fixedly engaging said article and rigid insertion members in form of pins, and at least one clamping device rotatably supported by said base to be fixable thereon at different angular positions, said clamping device having a plurality of seats for receiving said pins of said at least one connection element and means for clamping said pins in said seats, wherein said pins are arranged on said at least one connection element according to directions forming angles between each other and said seats are arranged in said clamping device at positions such as to receive selected of said pins to allow positioning of said at least one connection element and article at plural angled positions with respect to said clamping device, and wherein said clamping device comprises a clamping block rotatably supported by said base, said clamping block comprising a shaped element having said seats machined therein such as to be partially open laterally, and clamp members for clampingly engaging said pins in said seats at points where said seats are open.

4,382,590

PLATE CUTTING FRAME

Mahendra K. Pandya, 8018 Daytona, NW., Massillon, Ohio 44646, and Manuel G. Vega, 1930 Otterbin St., Louisville, Ohio 44641

Filed Feb. 12, 1981, Ser. No. 234,024
Int. Cl.³ B26D 7/01
U.S. Cl. 269—87.2 **14 Claims**



1. A device for cutting a thin main plate of material into a plurality of smaller size, rectangular-shaped plates, said device including:

(a) base means for holding a main plate in a fixed position;

(b) a template removably mounted on the base means and adapted to overlie a main plate when held on the base means;

(c) a plurality of spaced, parallel, linear guide grooves formed in the template, said grooves being adapted to slidably receive the end of a cutting tool therein for cutting a main plate in a line along a selected guide groove; and

(d) mounting means formed on the base means and template for mounting the template on the base means in a first cutting position in which the guide grooves extend in a first direction and in a second cutting position in which the guide grooves extend in a second direction transverse to said first direction, whereby a cutting tool when moved along certain selected guide grooves in the template first position and then moved along certain selected guide grooves in the template second position cuts a predetermined sized rectangular-shaped plate from the main plate.

4,382,591

CLAMPING MEANS FOR TROUGH OF PIPE HANDLING APPARATUS

C. W. Minnis; Hubert A. Hawkins, and Wendell Davis, all of Forth Worth, Tex., assignors to Ingram Corporation, New Orleans, La.

Filed Sep. 30, 1980, Ser. No. 192,477
Int. Cl.³ E21B 19/14
U.S. Cl. 269—156 **10 Claims**

1. A pipe clamping apparatus for clamping a length of pipe or the like to a trough of a pipe handling apparatus comprising:

a pair of arms pivotally coupled to said trough on opposite sides thereof,

said trough having a top surface for receiving a length of pipe,

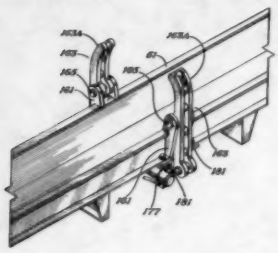
each said arm including a clamping portion and an opposite end,

said arms being adapted to move toward each other to closed positions such that said clamping portions clamp a length of pipe to said top surface of said trough and to move away from each other and from said top surface to open positions such that a length of pipe can be positioned

between or removed from between said clamping portions, and

a pair of cylinders pivotally coupled to opposite sides of said trough,

each said cylinder having a piston rod pivotally coupled to said opposite end of said arm on its associated side such that when said piston rods are extended said arms are moved to said closed positions and when said piston rods are retracted said arms are moved to said open positions,



said cylinders each having first and second opposite ends with said piston rods extending out of said second ends, and

said second ends of said cylinders being pivotally coupled to said trough such that said first ends are free to move as their piston rods are moved to their retracted or extended positions.

4,382,592

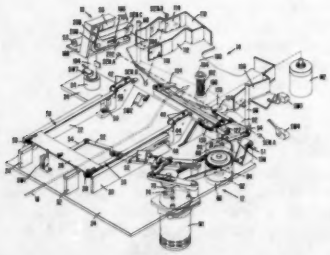
APPARATUS FOR COLLATING SHEETS INTO SETS AND FINISHING THEREOF

Steven R. Harding, Idaho Falls, Id.; Richard A. Lamos, Delray Beach, Fla., and Donald C. Roller, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 77,958, Sep. 24, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 290,468

Int. Cl.[3] **B42B** *2/00*; **B65H** *39/00*

U.S. Cl. 270—53 **16 Claims**



1. An offset collator wherein sheets are sequentially supplied in a sequence of the first sheets of each set numbering up to and corresponding to the number of sets to be offset collated and in turn, and in order, of additional sheets of each set numbering up to and corresponding to the number of sheets in a set, the improvement comprising:

reciprocating sheet transport means for engaging, transporting along a predetermined path and then releasing in said sequence, said sheets of sets to be offset collated;

sheet receiving means for receiving from said sheet transport means in said sequence said sheets of sets to be offset collated and for holding all the sheets of said sets, in contiguous, contacting relationship to one another forming a single, continuous stack, said sheet receiving means having means positionable in alternate positions so that said transport means transports each said sheet thereto, releasing said sheet therein while in an alternate one of said positions, for forming a single stack and for offsetting each said first sheet of each said set from adjacent first sheets in an alternate offset posture in said stack clearly demarcating each of said first sheets from adjacent first sheets; and means for separating said offset demarcated sheets of said single stack to allow transport injection therebetween of a second sheet, of each set to be offset collated, by said transport means and release thereof while said positionable means is in an alternate one of said positions so said second sheet is contiguous to said first sheet of its set, and transport and release of additional sheets, of each set to be offset collated, if required by the number of sheets in said sets, in the same alternate offset posture to each of the prior sheets of its sets; and

means for controlling said sheet transport means and said sheet receiving means to coordinate said positioning, said transport, and said release such that said collated sets are concurrently formed in said sheet receiving means.

8. An offset stapler apparatus for corner stapling offset sets in a single stack of collated sets or jobs comprising:

movable sheet receiving bin means for receiving collated sets or sorted jobs disposed therein in an alternate offset posture to form said offset sets in said stack each said set having an alternate offset portion thereof and for maintaining said collated sets or said sorted jobs in said alternate offset posture;

stapler separation means for initially engaging said alternate offset portion of a bottom one of said alternate offset sets and thereby supporting said stack, releasing the bottommost set, and for cooperating with said movable sheet receiving bin means for sequentially engaging said alternate offset portion of successive ones of said alternate offset sets or jobs and thereby supporting the remainder of said stack while successively releasing ones of said sets or jobs; and

offset stapling means disposed adjacent to one side of said movable sheet receiving bin means for offset stapling said collated sets or said sorted jobs, said movable sheet receiving bin cooperating with said offset stapling means and said stapler separation means to move each of said released collated sets or said released sorted jobs into said stapling means, to corner staple said set or job and to remove said set or job from said offset stapling means, whereby said collated sets or sorted jobs of said offset stack are corner stapled in sequence, all of the collated sets or the sorted jobs being maintained in their alternate offset posture to each of the other sets or jobs of said offset stack before, during and after offset stapling thereof.

11. Apparatus for offset collating sequentially supplied sheets, comprising:

movable receiver means for translating between each of at least two different positions and for receiving sheets while in said positions to form clearly demarcated offset sheets, said receiving means holding all the collated sheets in contiguous contacting relationship to one another, forming a single, continuous stack;

insertion means for sequentially engaging each of said sequentially supplied sheets and for sequentially inserting said sheets in said receiver means, forming a single stack;

means to control said receiver means and said insertion means for positioning each said sheet in one of said different positions than that for the immediately preceding sheet, said sheets being offset thereby; and

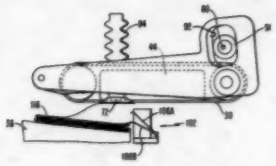
separation means at said receiver means for engaging said inserted offset sheets and separating differently offset adjacent sheets of said stack to allow said insertion means to insert a further sequentially supplied sheet between said separated sheets.

4,382,593

VACUUM DOCUMENT FEEDER

Mark A. Beran, Boulder County, and Donald F. Colglazier, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,172
Int. Cl.³ B65H *3/08, 3/12*
U.S. Cl. 271—12 **6 Claims**



1. A vacuum automatic document feeder for feeding single documents from a document stack onto the document platen of a convenience copier comprising in combination:

a means for supporting the stack;

a pair of vacuum picker assembly means disposed above the stack, said pair of vacuum picker assembly means being operable to lift the topmost sheet and to transport said sheet through a straight path to a transition zone above the stack;

a vacuum transport means disposed at the transition zone, said vacuum transport means being orientated in a plane perpendicular to the straight path;

a valve means operable to control vacuum to said pair of vacuum picker assembly means;

a switch means operable to control the closing and opening of said valve means;

a pressure sensing means coupled to the pair of vacuum picker assembly means and the vacuum transport means, said pressure sensing means being operable to sense pressure therein; and

a programmed microcomputer responsive to signals outputted from the pressure sensing means and operable to enable the switch means after a predetermined time-out interval so that the vacuum to the pair of vacuum picker assembly means is dropped when said pair of vacuum picker assembly means is positioned relative to the bottom surface of the vacuum transport means whereby the sheet is dislodged without relative motion onto the vacuum transport means.

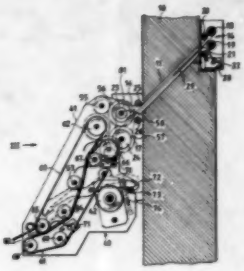
4,382,594

DEVICE FOR DISPENSING SHEET MATERIAL OUT OF A CLOSED RECEPTACLE

Peter Weigel, Bo.-Dörenhagen, and Rudolf Schmeykal, Paderborn, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,513
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014173
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—272 **15 Claims**

1. Device for dispensing sheet material out of a closed receptacle, especially for dispensing certificates through the wall of a safe by means of a conveyor arrangements which conveys the sheet material from a receiving place inside the receptacle, through a wall opening, and out to a removal place outside the receptacle, characterized that a conveying route running inclined from the receiving place **(14)** to the removal place **(15)** is provided, which route is formed by endless conveyor belts **(16,17)** lying one against another, and that driving and/or



deflector rollers **(18,19,23,24)** of the endless conveyor belt **(16,17)** are arranged directly adjacent the wall opening **(11)**.

4,382,595

SWING SEAT ADAPTER

Barbara D. Tolar, 27 Sacramento Dr. Apt. 27, Hampton, Va. 23666

Filed Nov. 14, 1980, Ser. No. 207,065
Int. Cl.³ A63G *9/00*
U.S. Cl. 272—85 **12 Claims**

1. In combination with a swing of the type including an elongated horizontal transverse seat suspended at its opposite ends from the lower ends of a single pair of dependingly supported suspension members including anchor means at their lower ends anchored to said seat ends, an adapter for said seat including front, rear and opposite side marginal portions and incorporating a pair of laterally spaced upstanding sides extending between said front and rear marginal portions, an upstanding transverse rear wall structure extending and secured between the rear marginal portions of said sides, said adapter being downwardly and removably seated upon said seat between the lower ends of said suspension members, retaining means operatively removably coupled between upper portions of said sides and adjacent portions of said suspension members spaced above said seat and above said anchor means for preventing the seat from excessive forward or rearward tilting, and occupant restraining harness structure carried by said adapter operative to releasably secure a child within said adapter and seated on said seat.

4,382,596

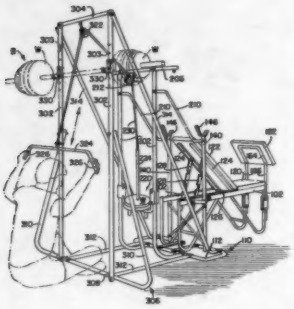
WEIGHT LIFTING TYPE EXERCISING DEVICE

Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

Division of Ser. No. 12,487, Feb. 15, 1979, Pat. No. 4,316,609. This application Feb. 18, 1982, Ser. No. 349,857

Int. Cl.³ A63B 21/06

U.S. Cl. 272—118 4 Claims



1. An exercising apparatus comprising:

(a) a bench having:

(1) an elongated bench frame;

(2) a fixed seat portion supported on said bench frame at the foot end of said bench;

(3) an adjustable incline seat portion hinged to said bench frame adjacent to said fixed portion and extending to the head end of said bench; and

(4) means for adjustably supporting said incline portion on said bench frame at a desired angle of inclination;

(b) a weight pull device at the head end of said bench having;

(1) a pair of upstanding spaced apart parallel guides attached to said bench frame;

(2) a top crosspiece interconnecting the upper ends of said guides;

(3) weight-supporting means for supporting weights during a raising and lowering operation by a user, said weight-supporting means being slidably guided along said guides;

(4) weight pulley means guiding a tension element reeved thereover which connects to the weight-supporting means, said weight-supporting means being connected to said top crosspiece; and

(5) at least one tension element connected to said weight-supporting means and trained through said pulley means to be pulled by a user lying or sitting on said bench; and

(c) a lat bar device being positioned forwardly of the head end of the bench and having:

(1) an upstanding lat frame adjacent the weight pull device, said lat bar device having an overhead bar, said lat frame being connected directly to said bench frame,

(2) lat pulley means for raising the weight-supporting means, said lat pulley means being connected to said overhead bar, and

(3) a user-engaged lat bar connected to said weight-supporting means by said tension element which is trained over said weight pulley means and said lat pulley means.

4,382,597

PINBALL GAME EMPLOYING LIQUID

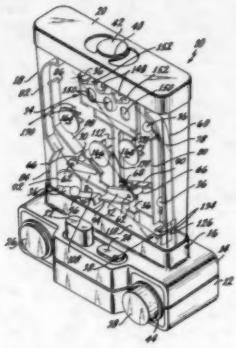
Koichi Minami, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 171,661, Jul. 24, 1980, Pat. No. 4,363,483. This application Sep. 15, 1980, Ser. No. 187,567

Claims priority, application Japan, Nov. 13, 1979, 54-146845

Int. Cl.³ A63F 7/00

U.S. Cl. 273—1 L 3 Claims



2. A game having a transparent housing, a liquid located within said housing, a movable member having a specific gravity greater than the specific gravity of said liquid, said movable member located within said housing in said liquid, two circulating means for circulating said liquid within said housing, each of said circulating means capable of being independently operated such that each is capable of removing liquid from the interior of said housing and ejecting a stream of said liquid into the interior of said housing at a variable rate, each of said circulating means having a nozzle directed into the interior of said housing for ejecting said stream of liquid into the interior of said housing the improvement which comprises:

said nozzles located seperately within the interior of said housing and spaced apart from one another such that said stream of liquid ejected from each of said nozzles will at least each initially move independently from the stream of liquid ejected from the other of said nozzles;

two pivoting members each independently pivotally mounted within the interior of said housing in said liquid and each capable of moving with respect to said housing, one of said pivoting members operatively associated with the nozzle of one of said circulating means and the other of said pivoting members operatively associated with the nozzle of the other of said circulating means, each of said pivoting members independently being capable of being pivoted with respect to said housing in response to impingement upon at least a portion of each of said pivoting members by a portion of said stream of liquid ejected from its associated nozzle;

a portion of said stream of liquid ejected from each of said nozzles capable of moving past the pivoting member associated with said nozzles from which said stream of liquid is ejected without impinging upon said pivoting member to cause currents to flow within the body of liquid located within said housing;

each of said pivoting members capable of independently causing movement of said movable member within said housing when said movable member is positioned adjacent to said pivoting member such that it can be contacted by said pivoting member as said pivoting member pivots;

goal receptacle means located within said housing and surrounded by said liquid so as to be capable of receiving said movable member as said movable member moves through said liquid;

said goal receptacle means comprises a goal receptacle having an inlet opening and an outlet opening and including a closure means associated with said outlet opening to reversibly close said outlet opening allowing retention of said movable member within said goal receptacle and release of said movable member from said goal receptacle through said outlet opening by disassociating said closure means from said outlet opening;

said housing is vertically oriented and includes said pivoting members located below said goal receptacle and said outlet opening of said goal receptacle located below said inlet opening of said goal receptacle;

movable member launcher means located within said housing, at least a portion of said launcher means is located within said liquid;

said movable member launcher means capable of causing said movable member to move within said liquid such that it is capable of being acted upon by said pivoting members;

at least one out-of-play receptacle located in association with the lower extremities of said vertically oriented housing, said movable member capable of being located within said out-of-play receptacle and incapable of being acted upon by said pivoting members when located in said out-of-play receptacle;

transfer means associated with said out-of-play receptacle and said launcher means, said transfer means capable of transferring said movable member from said out-of-play receptacle to said launcher means;

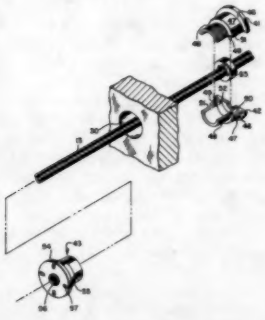
said transfer means includes a member pivotally mounted at a point between its two ends to said housing, said member forming the bottom surface of said out-of-play receptacle and capable of retaining said movable member within said out-of-play receptacle when the first of its ends is at a lower vertical orientation than the second of its ends and capable of transferring said movable member to said launcher means when the first of its ends is at a higher vertical orientation than the second of its ends.

4,382,598

ROD BEARING FOR TABLE SOCCER OR FUSSBALL GAME STRUCTURE

Calvin E. McCloud, 5204 Airport Fwy., Ft. Worth, Tex. 76117

Filed Apr. 2, 1982, Ser. No. 364,802
Int. Cl.³ A63F *7/06, 7/36*
U.S. Cl. 273—85 D **9 Claims**



1. An improved table soccer or fussball game structure of the type having a playing field portion surrounded by raised opposite side walls and raised end walls wherein a plurality of actuating rods extend through apertures in said opposite side walls and are spaced transversely of and above said playing field portion, said rods supporting game figures thereon which depend adjacent said playing field portion to contact a ball disposed thereon, said actuating rods being rotatively and axially movable relative to said side walls, and wherein the improvement includes a rod bearing mounted in each aperture in said side walls, said bearing comprising:

a first bearing half having an outer sleeve portion snugly received into one of the apertures in the table wall, said sleeve portion having an inner threaded cylindrical wall for receiving a second bearing half, and a radially extending flange for engaging the outer side wall adjacent the aperture, said flange including a circular clearance aperture for receiving a playing rod coaxially through the bearing half;

a second bearing half having an outer cylindrical threaded portion for engaging the threaded inner wall of the first bearing half, an outer sleeve portion received into one of the apertures in the table wall and separated from the threaded portion by a stepped region, and a radially extending flange for engaging the inner side wall adjacent the aperture, said flange including a clearance aperture for receiving a playing rod coaxially through said bearing half, said second bearing half being separable along opposed axial parting lines into two identical halves to expose an enlarged cylindrical cavity adjacent the inner wall of said flange and coaxial with the clearance aperture; and

a bearing ring positioned in said cylindrical cavity of the second bearing half and having an inner diameter sized to closely receive a playing rod, said ring being formed of an anti-friction material to smoothly journal the rod for axial and rotational movement with the only contact between the rod and the assembled rod bearing, when the axis of the rod is straight, being at the inner surface of the bearing ring.

6. A rod bearing for a fussball game table playing figure actuation rod, comprising:

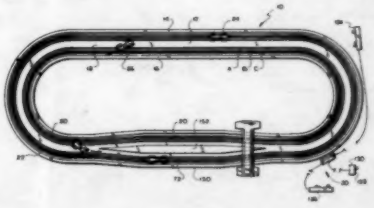
a pair of coaxial bearing halves each including a cylindrical outer sleeve portion for engaging the inner wall of a rod opening through a game table wall, and radial flanges for engaging the table walls adjacent the opening, said flanges each having clearance holes for receiving a rod extending coaxially through the bearing, said halves each having mating threaded portions for assembly of the two halves from opposite sides of a rod opening in a game table wall, one of said halves being separable into identical hemicylindrical portions along opposed, axial parting lines to expose an inner chamber within which is positional an anti-friction bearing ring having an inner diameter sized to closely receive and journal a rod for axial and rotational movement within the bearing.

4,382,599

TOY VEHICLE GAME

Neil Tilbor, Fresh Meadows, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,756
Int. Cl.³ A63F *9/14*; A63H *18/12*
U.S. Cl. 273—86 B **8 Claims**



1. A toy vehicle game including a relatively flat slotless track defining a pair of lanes along the track length, at least one controllable electrical toy vehicle for use on the track, player operable means for causing said controllable vehicle to switch lanes and move at variable speeds along the track; and means in said track lanes for supplying current to said vehicle; said

track including a track section comprising a continuation of said pair of lanes; and means for alternately interrupting the supply of current to the lanes of said track section while providing an indication as to which lane no current is supplied, whereby a player must control his controllable vehicle to enter the lane of said track section to which current is supplied.

4,382,600

GAMEBOARD WITH METALLIC BALL AND MAGNETIC TARGET AND VELOUR SURFACE

Frank Vieira, 1431 Alta Vista, Hollister, Calif. 95023

Filed Apr. 14, 1981, Ser. No. 254,323
Int. Cl.³ A63F 7/00
U.S. Cl. 273—118 R **1 Claim**

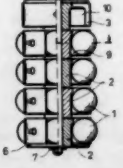
1. Game apparatus comprising: a gameboard having a base, a pair of spaced sides, and a pair of spaced ends, the sides and ends being secured to the base at the outer periphery thereof to define a playing area; a layer of fabric material on the upper surface of the base and on the surfaces of the sides and end facing the playing area, the material being of a velour having a pile on the upper surface thereof and a smooth knitted, generally flat lower surface; a plurality of pins secured to and extending upwardly from the base in the playing area; means defining a pair of goals near respective ends of the gameboard, each goal comprising a wicket spaced from the respective end of the gameboard and a magnet coupled to the respective end of the gameboard, the magnet being above the layer of fabric material on said upper surface of the base and in alignment with the adjacent wicket; a metallic ball defining a player piece and capable of being attracted by the magnet, said ball being movable over the upper surface of the material on the base and engagable with the material on the sides and ends, the spacing between the pins being great enough to allow the ball to pass between the pins; and at least one elongated striker member adapted to be hand-held at one end thereof in a generally upright position for striking the ball to move the ball over the upper surface of the material on the base, whereby the ball can be struck and moved toward and into a goal to result in a score of the game, and striker member having a hole therethrough near the opposite end thereof in alignment with the longitudinal axis of the striker member to permit viewing of the ball before the ball is struck by the striker member.

4,382,601

CYLINDRICAL LOGICAL TOY

Istvan Dezsi, Szolnok, Hungary, assignor to Konsumex Külkereskedelmi Vallalat, Budapest, Hungary

Filed Feb. 18, 1981, Ser. No. 235,527
Claims priority, application Hungary, Mar. 3, 1980, 484
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S **4 Claims**



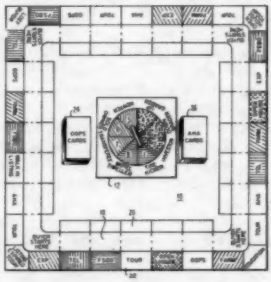
3. A logical toy comprising: a plurality of superposed rings forming a rotationally symmetrical configuration wherein each ring has a plurality of nests equal in number to the number of rings and wherein each nest is configured to receive a spherical toy element therein for vertical displacement from one ring to the other; a plurality of toy elements equal in number to the square of the number of rings, the toy elements disposed in said nests; means forming an additional location for receiving a single toy element from an adjacent nest; and means mounting the rings for maintaining same in the rotationally symmetrical configuration and for permitting rotation of each ring about the longitudinal axis with respect to the remaining rings.

4,382,602

REAL ESTATE GAME APPARATUS

Timothy H. Cusick, 167 Church St., and Eric R. Giuffrida, 1530 N. Mountain Ave., both of Ashland, Oreg. 97520

Continuation of Ser. No. 960,164, Nov. 13, 1978, abandoned. This application Dec. 4, 1980, Ser. No. 213,007
Int. Cl.³ A63F 3/00
U.S. Cl. 273—256 **4 Claims**



1. A game apparatus comprising:
a first game piece representing a buyer;
a second game piece representing a prospecting agent;
a third game piece representing a property listed for sale;
a chance device actuable by a player, said chance device being provided with a plurality of coded indicia and a pluraltiy of numerals; and
a game playing area, said game playing area including,
a first track (buyer track) having a series of first spaces constituting a path along which said first game piece representing a buyer can move in a number of steps dependent upon numerical indications randomly selected by actuation of said chance device,
a series of second spaces adjacent ones of said first spaces, upon which said third game piece may be placed; and
a second track (prospecting circuit) having a series of spaces constituting a path along which said second game piece representing a prospecting agent can move in a number of steps dependent upon numerical indications randomly selected by actuation of said chance device, said second track being provided with additional coded indicia on at least one space thereof representative of a basic prospecting-for-listing business action, said additional coded indicia on said second track corresponding to one of said plurality of coded indicia on said chance device;
said first game piece being distinguishable from said second and third game pieces,
said first game piece having means correlating said first game piece with said first track;
said second game piece being distinguishable from said first and third game pieces,
said secnd game piece having means correlating said second game piece with said second track;
said third game piece being distinguishable from said first and second game pieces,

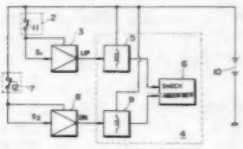
whereby a game can progress utilizing said second track or said first track in either a "prospecting" or a "working with buyer" mode, respectively, in accordance with which mode is selected by a player and, whereby a property for listing is obtainable by a player (said player having selected said "prospecting mode") dependent upon an identity of coded indicia on said one space of said second track and similar coded indicia randomly selected by further actuation of said chance device.

4,382,603

LEVEL REGULATOR FOR AN AUTOMOTIVE VEHICLE

Tetsuo Senoo, Inagi, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jan. 9, 1981, Ser. No. 223,843
Claims priority, application Japan, Jan. 16, 1980, 55-3389
Int. Cl.³ B60S 9/00
U.S. Cl. 280—6 R 9 Claims



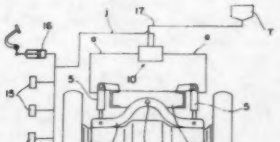
9. A level regulator for a automotive vehicle, comprising:
a supply voltage source;
means for raising and lowering a vehicle;
circuit means for causing said raising and lowering means to raise and lower a vehicle in response to level-up and level-down signals respectively, when said circuit means is connected to said supply voltage; and
switch means including mechanically operated switches for detecting a high vehicle condition and a low vehicle condition, and applying said level-down signal and said level-up signal to said circuit means in response to said high and low conditions, respectively, and connecting said supply voltage to said circuit means only in response to either said high and low vehicle conditions wherein said supply voltage source is connected to said circuit means only through said switch means such that said supply voltage source is connected to said circuit means only in response to said high and low vehicle conditions.

4,382,604

STRUCTURE OF A RUNNING SYSTEM IN A WORK VEHICLE

Masao Nakagawa, Sakai, Japan, assignor to Kubota Ltd., Japan

Filed Feb. 19, 1981, Ser. No. 235,898
Claims priority, application Japan, Sep. 25, 1979, 54-132709
Int. Cl.³ B60P 1/18
U.S. Cl. 280—6 H 4 Claims



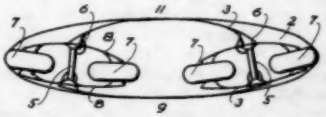
1. A structure for a running system in a work vehicle, with provision of right and left running wheels (1), (1), hydraulic cylinders (5), (5) with pistons which function as axle suspension means extensible and retractable in opposition to each other in response to axle-tilting displacement of the wheels as the wheels rise and lower in turn in opposition to each other, a conduit (a) connecting the cylinders (5), (5) to each other with an on-off valve (10) interposed therebetween to be arbitrarily maneuverable to lock up both cylinders (5), (5), and a conduit (17) made connectable to said cylinder-connecting conduit (a) for supplying oil to fill any of the cylinders (5), (5), characterized in that the oil-supply conduit (17) is connected to the on-off valve (10) by bifurcation branch passages (k, n, m,; k,n,m) to both lateral sides thereof where the cylinder-connecting conduit (a) is respectively connected, and that in both the bifurcation branch passages (k,n,m; k,n,m,) there are provided, respectively, valves (11), (11) adapted to supply oil from said supply conduit (17) to said cylinder-connecting conduit (a) only when the inner pressure within this cylinder-connecting conduit (a) has dropped to a negative pressure below a preset threshold.

4,382,605

TILT STEERING OF TANDEM WHEELED OR RUNNER EQUIPPED VEHICLE

Hans O. Hegna, 2113 Mariner's Dr., Newport Beach, Calif. 92660

Filed Aug. 28, 1980, Ser. No. 182,108
Int. Cl.³ A63C 17/02
U.S. Cl. 280—11.22 9 Claims



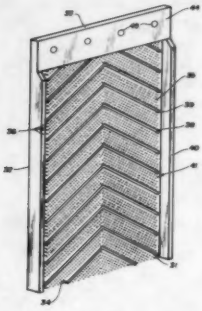
1. A mechanism for steering a vehicle having two wheels in a tandem configuration and having a frame which has approximately vertical projections on each side, and two pairs of laterally resilient suspension members attached to said projections and projecting substantially fore and aft, each suspension member within a pair being attached to either side of said frame and being not parallel to the longitudinal vehicle axis but rather the forward pair converging forward toward said vehicle axis and the rearward pair converging rearward toward said vehicle axis; and the free ends of each pair of suspension members being attached to either end respectively of a wheel axle in such a way as to permit some horizontal angular displacement between each said wheel axle and its suspension members, and one of said wheels supported on bearings on each said wheel axle so that when said vehicle is being tilted to one side by an operator said suspension members will yield laterally relative to said frame due to the influence of gravity, and because of their unparallel geometry relative to said vehicle axis they will move relative to the tilt of said axles with the uphill end of the front wheel axle moving forward and the downhill end of said front wheel axle moving rearward and the uphill end of the rear wheel axle moving rearward and the downhill end of said rear wheel axle moving forward thus forcing a turn of at least one of the wheel axles and causing a moving vehicle to execute a turn.

4,382,606

SPRAY CONTROLLING SYSTEM AND SPLASH GUARD FOR AUTOMOTIVE VEHICLES

Robert E. Lightle; James R. Lockwood, both of Wapakoneta; Douglas F. Busch, and Michael B. Mosholder, both of Columbus, all of Ohio, assignors to Lancaster Colony Corporation, Columbus, Ohio

Filed Feb. 2, 1981, Ser. No. 230,332
Int. Cl.[3] B62D *25/016*
U.S. Cl. 280—154.5 R 54 Claims



1. A splash guard for automotive vehicles for controlling water spray generated by the wheels when traversing a moisture covered roadway comprising a sheet-form panel having a surface adapted to be disposed in vertically extending, facing relationship to a vehicle wheel, a vertically extending edge at each side of said panel surface, transverse bottom and top edges, and a spray controlling surface conformation formed on said panel surface, said spray controlling surface conformation including a plurality of projections fixedly positioned on said sheet-form panel in outwardly projecting relationship to said panel surface to collect water thrown against said surface, said projections being arranged in a plurality of elongated rows extending generally transversely across said panel with the projections in each row disposed in sufficiently closely spaced relationship to effectively form a water directing wall, each of said rows of projections disposed in spaced relationship to an adjacent row or projections to form in cooperation therewith a channel and extending in downwardly inclined relationship toward a vertically extending side edge whereby water collected in the channels between said rows of projections will be induced to flow transversely across said panel surface in a downwardly inclined direction toward a vertical side edge of said panel.

4,382,607

STEERING SYSTEM FOR A TRAIN OF RAIL-LESS VEHICLES

Edward T. Voight, Worthington, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,318
Int. Cl.[3] B60D *1/14;* B62D *53/00*
U.S. Cl. 280—408 15 Claims

12. A rail-less train of series connected vehicles, each vehicle having front and rear independently mounted pairs of wheels for separate pivotal movement supporting said vehicle, each wheel pivotally connected through a vertical pivot to said vehicle, said vehicles coupled together only by a plurality of steering bars each pivotally connected at its opposite end portions between adjacent vehicles and each steering bar provided with linkage means connected from its longitudinal end portions to adjacent wheel pairs on the corresponding vehicle for positioning said pair of wheels at a turning angle independent of the turning angle of the other pair mounted on said

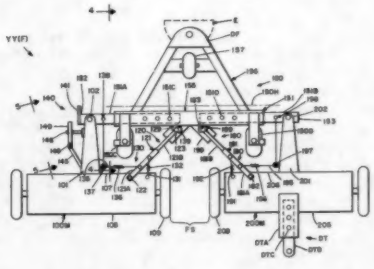
vehicle whereby the wheels of each vehicle in the moving train of vehicles closely track the wheels of the preceding vehicle.

4,382,608

TOWABLE PAIRED TEAMS OF FARM IMPLEMENTS

Gerald J. Konz, R.R. #1 (Box 72), Minden, Iowa 51553

Filed Jun. 25, 1981, Ser. No. 277,152
Int. Cl.[3] B60D *1/14*
U.S. Cl. 280—411 A 15 Claims



1. A paired team of first and second farm implements connected through an intervening frame member in a condition permitting a drayage vehicle to tow said two farm implements in an abreastly field or a tandemly transport position, said first and second implements respectively having a central leadward-tongue, a trailward-side, and a leftward-length and a rightward-length positioned on opposite sides of the leadward-tongue, said towable implements team comprising:

A. for the frame member:

ai. a frame-axis parallel to an elongate frame-bar component of the frame member, said frame-axis assuming a transverse relationship with respect to the towing direction when said implements are in abreastly field position and assuming a parallel relationship to the towing direction when said implements are in tandemly transport position,

aii. said frame-bar having a medial-length located intermediate a first-end and a second-end of said frame-bar, the first and second implements at their leadward-tongue being pivotally connected to the frame-bar on opposite sides of the medial-length,

aiii. a frame-tongue located forwardly from and attached to the frame-bar and being adapted to engage the drayage vehicle during field position,

aiv. a pair of permanently lowered wheels extending rearwardly from the frame-bar, said wheels flanking the

frame-tongue and being multi-directional so as to follow every selected towing direction initiated by the drayage vehicle, and

av. a dual-elevational and multi-directional outrigger-wheel located rearwardly of and attached to the frame-tongue, said outrigger-wheel being employed in ground engaging elevation when the implements are being towed in transport position and being employed above ground when the implements are being towed in field position;

B. field position determining means, initiatable when the drayage vehicle pulls upon the frame-tongue, comprising a pair of removably secured bracing means to maintain the implements in finite-spacing parallelism, one of said bracing means removably extending from the frame-bar to the leftward-length of one implement and the other side bracing means removably extending from the frame-bar to the rightward-length of the other implement; and

C. transport position determining means, initiatable when the drayage vehicle pulls upon a tandem-tongue, comprising:

ci. for a primary of the two implements, a central tandem-tongue extending trailwardly from its leadward-tongue and trailwardly beyond said implement trailward-side, and

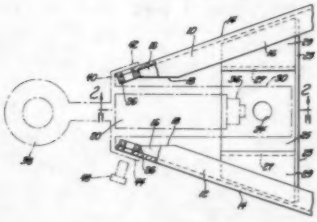
cii. for the secondary of the two implements, a bridging means removably extendable from its leadward-tongue to an endward location of the frame-bar, said bridging means being sufficiently rigid and of appropriate location to ensure a non-pivotal collinear relationship between the secondary implement and the frame-bar.

4,382,609

INTERCHANGEABLE FIXED OR DAMPED TOWING SYSTEM

Davis L. Hemmings, Royal Oak, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1981, Ser. No. 321,502
Int. Cl.³ B60D *1/02*
U.S. Cl. 280—415 A **2 Claims**



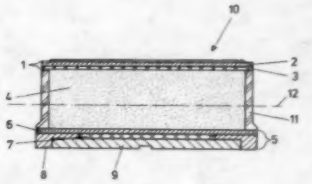
1. In a trailer that comprises a horizontal A-frame at the trailer front end; said A-frame including two forwardly convergent rails of channel cross-section arranged with their flange walls extending toward one another, said rails having their front ends spaced apart to define an open zone therebetween, and a transverse bridge element connecting the rails at points rearwardly spaced from the rail ends: the improvement comprising a first non-damped towing mechanism, and a second damped towing mechanism, said mechanisms being constructed to be interchangeably bolted to the forward end of the A-frame in the aforementioned open zone; each towing mechanism including an upright mounting plate having a central plate area sized to extend transverse to the A-frame longitudinal axis at the rail front ends, said mounting plate also including end areas acutely angled to the central plate area for facial engagement with outer surface areas of the convergent rails; each towing mechanism also including a horizontal base plate arranged to extend from the aforementioned mounting plate rearwardly into overlapping relationship with the aforementioned bridge element; first bolt-nut means for securing one of the mounting plate end areas to one of the rails; second bolt-nut means for securing the other mounting plate end area to the other rail; and third bolt-nut means for securing the rear end of the base plate to the bridge element.

4,382,610

SKI WITH LAYERED CONSTRUCTION

Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria

Filed Feb. 19, 1981, Ser. No. 235,949
Claims priority, application Austria, Feb. 20, 1980, 926/80
Int. Cl.³ A63C *5/12*
U.S. Cl. 280—610 **9 Claims**



1. Ski having a longitudinally extending central plane with a top plate located above the plane, a bottom plate located below the plane and a core extending between said top plate and said bottom plate, each of said top plate and bottom plate comprises at least two layers one above the other and each of the layers in said top plate and bottom plate being formed of materials having a different coefficient of linear expansion so that said top plate and bottom plate each comprises a larger coefficient of linear expansion layer and a smaller coefficient of linear expansion layer, wherein the improvement comprises that said larger coefficient layer and said smaller coefficient layer in said top and bottom plates are arranged asymmetrically relative to the longitudinal central plane of the ski with respect to the positional sequence of said layers and with respect to the thickness of said layers, the thickness of said larger and smaller coefficient layers in said top plate and said bottom plate being different, the thickness of said larger coefficient layer in said top plate is greater than the thickness of said larger coefficient layer in said bottom plate and the thickness of said smaller coefficient layer in said top plate is smaller than the thickness of said smaller coefficient layer in said bottom plate.

4,382,611

SKI BINDING AND BOOT

Georges P. J. Salomon, Annecy, France, assignor to Ets. Francois Salomon et Fils, S.A., Annecy, France

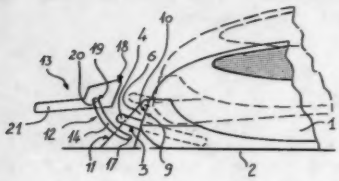
Filed Jan. 30, 1980, Ser. No. 116,847
Claims priority, application France, Jan. 31, 1979, 79 02513
Int. Cl.³ A63C *9/10*
U.S. Cl. 280—615 **39 Claims**

1. A ski binding in combination with a boot or shoe adapted to be secured to a ski by said binding, said binding comprising:

(a) a support element adapted to be mounted on said ski, said support element comprising an abutment zone;

(b) a latching element comprising a transverse bit, said latching element being mounted to extend forwardly in front of said boot, said latching element forming an open space between

said transverse bit and a support zone provided on said boot through which said support element extends; and



(c) a moveable latch adapted to exert a force for forcing said support zone against said abutment zone.

4,382,612

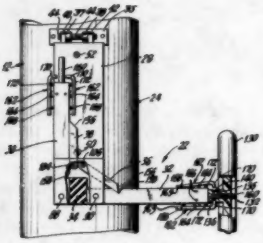
ROLLABLE GOLF BAG

Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y. 11694

Filed Dec. 8, 1980, Ser. No. 214,129

Int. Cl.³ B62B *1/20*

U.S. Cl. 280—646 **7 Claims**



1. A rollable golf bag comprising:

a golf bag container;

collapsible rolling assembly means coupled to said container for permitting both stationary positioning as well as rolling of the container;

said rolling assembly means including a plate member hingedly coupled to a peripheral wall of said container, said plate member being rotatable between a folded position adjacent the peripheral wall and an extended position angularly oriented in a downward direction from the peripheral wall;

two support arms peripherally coupled to said plate member and respectively swingable between a vertically aligned retracted position and a laterally outwardly directed extended position;

a respective wheel detachably coupled to a remote end of each support arm;

two locking brackets pivotally connected to said plate member intermediate said support arms and respectively swingable between a vertically aligned folded position and an angularly oriented downwardly directed extended position;

a notch respectively located on each support arm; and

a pawl at an end of each bracket for engaging a respective notch to thereby retain said support arms in their respective extended positions.

2. A rollable golf bag comprising:

a golf bag container;

collapsible rolling assembly means coupled to said container for permitting both stationary positioning as well as rolling of the container;

said rolling assembly means including a plate member hingedly coupled to a peripheral wall of said container, said plate member being rotatable between a folded position adjacent the peripheral wall and an extended position angularly oriented in a downward direction from the peripheral wall;

two support arms peripherally coupled to said plate member and respectively swingable between a vertically aligned retracted position and a laterally outwardly directed extended position;

a respective wheel detachably coupled to a remote end of each support arm; and

a resilient block mounted on said plate member and spaced between said support arms to spacially retain the support arms in both their extended and folded positions, while permitting rotation of the support arms between said two positions.

3. A rollable golf bag comprising:

a golf bag container;

collapsible rolling assembly means coupled to said container for permitting both stationary positioning as well as rolling of the container;

said rolling assembly means including a plate member hingedly coupled to a peripheral wall of said container, said plate member being rotatable between a folded position adjacent the peripheral wall and an extended position angularly oriented in a downward direction from the peripheral wall;

two support arms peripherally coupled to said plate member and respectively swingable between a vertically aligned retracted position and a laterally outwardly directed extended position;

a respective wheel detachably coupled to a remote end of each support arm, each wheel including an axially extending hub, an annular recess provided peripherally about each hub, an axial mounting bore through each hub;

each support arm including a mounting shaft axially extending from said remote end of each support arm; and

at least one spring biased clamp mounted on each support arm, each clamp having a radially directed tooth for engaging said annular recess of a respective one of said hubs to retain the respective wheel onto the support arm.

4,382,613

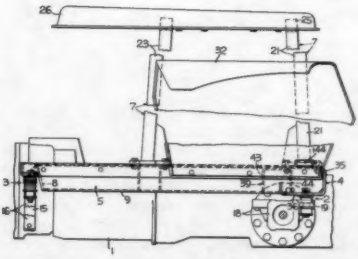
DEFLECTABLE SUPPORT FOR PROTECTIVE FRAME

Robert C. Haupt, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 22, 1980, Ser. No. 219,265

Int. Cl.³ B62D *27/04, 25/00*

U.S. Cl. 280—756 **9 Claims**



1. A vehicle having a protective frame over the operator station comprising, a vehicle chassis, a platform resiliently mounted on said vehicle chassis including resilient isolators mounted on said vehicle chassis resiliently supporting said platform, a protective frame mounted on said platform, a secondary support structure for said protective frame including a bracket fastened to a base of said protective frame and extending inwardly from the base, means on said bracket positioned in a predetermined spaced relation to said chassis for engagement

with said chassis in the event of excessive side loading of the protective frame causing deformation and shifting of the protective frame and thereby provide a firm support for the protective frame to assure that the protective frame will not fail and to assure safety of the operator.

4,382,614

WEBBING GUIDE DEVICE OF AN AUTOMATIC SEAT BELT APPLYING EQUIPMENT

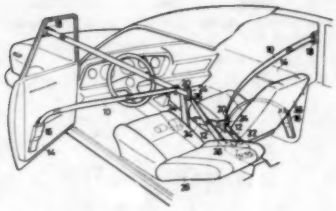
Tatsushi Kubota, Aichi, Japan, assignor to Tokai-Rika-Seisakusho K.K., Aichi, Japan

Filed Mar. 16, 1981, Ser. No. 244,303

Claims priority, application Japan, Mar. 21, 1980, 55-37612[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **3 Claims**



1. In an automatic seat belt applying assembly having a webbing guide device that moves webbing between a rearward position of occupant restraint and a forward position of occupant release in response to closing and opening respectively of the door of the vehicle adjacent to said assembly, the improvement which comprises:

an electric motor with a rotary shaft thereon,

a pivotal lever mounted at one end upon said shaft in free-rotational relationship therewith,

a guide slot carried by the opposite end of said lever through which said webbing slideably passes,

a torque transmitter fixed on said shaft for rotation therewith,

first and second stop means on said torque transmitter setting limits between which said lever may rotate relative to said shaft and said torque transmitter,

a resilient member that biases said lever toward engagement with said first stop means, whereby

the torque of said motor is transmitted to said lever through said first stop means when said webbing is moved toward said forward position and is transmitted to said lever through said resilient member when said webbing is moved toward said rearward position.

4,382,615

ICE SKATE GUARD

Jan L. Grönborg, Fullerstavägen 42, S-141 44 Huddinge, and Lars E. Persson, Mönstringsvägen 20, S-184 00 Akersberga, both of Sweden

Filed Feb. 17, 1981, Ser. No. 235,111

Int. Cl.³ A63C *3/12*

U.S. Cl. 280—825 **3 Claims**

1. A guard for the blade of an ice skate comprising: a first elongated part having a channel extending longitudinally thereof to receive the blade partially therein, said part at one end also having a recess opening longitudinally into said channel, said recess having an inwardly-upwardly inclined wall to form a socket for receiving one end of a skate blade, a second elongated part having a channel extending longitudinally thereof to receive the blade partially therein, said parts fitting telescopically one within the other and having a combined length greater than that of the skate blade, means for fixedly securing said parts in various relative positions of adjustment to accommodate blades of different sizes, and a leaf spring element fixedly secured to the free end of said second part and extending laterally in a direction toward a skate whose blade is to be received in said channel, the free end of said leaf spring element being formed to provide an inwardly-upwardly inclined surface to engage and retain the remaining end of a skate blade within the channel and an inwardly-downwardly inclined surface serving as a cam permitting the downward force of the tip of a skate blade temporarily to displace said leaf spring element and subsequently secure the guard releasably to the skate blade.

4,382,616

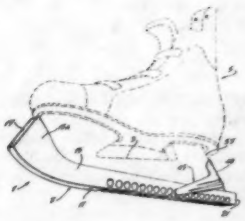
SKATE BLADE GUARD

Icaro Olivieri, Westmount, Canada, assignor to Warrington, Inc., Montreal, Canada

Filed May 21, 1981, Ser. No. 263,567

Int. Cl.³ A63C *3/12*

U.S. Cl. 280—825 **7 Claims**

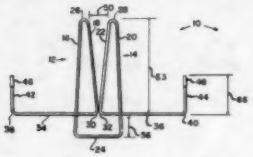


1. An ice skate guard having an elongated, protective member, a longitudinal slot in the protective member for receiving the skate blade of an ice skate to be guarded, a plurality of identically-shaped, longitudinally spaced-apart, recesses on the side of the protective member opposite the slot, the recesses being inwardly directed toward the slot, each recess having a narrow throat portion leading to an enlarged portion and a holding member, the holding member having first means detachably cooperating with any one recess to detachably hold the holding member and protective member together, and second means for use in holding the skate blade in the slot when the blade is inserted in the slot, and when the holding member and protective member are held together in a desired position dependent on the length of the skate blade, wherein the first means on the holding member having a portion sized to fit snugly within the enlarged portion of each recess, and one of the holding member and the elongated protective member being made of a material which is resilient such that the portion of the holding portion will pass through the narrow throat portion.

4,382,617
COMBINED BOOK LEAF HOLDER AND BOOKMARK

J. Paul Fortier, 6220 Dartmouth Ave. North, St. Petersburg, Fla. 33710

Filed Oct. 14, 1980, Ser. No. 196,218
Int. Cl.³ B42D 9/00
U.S. Cl. 281—42 9 Claims



4. A combined book leaf holder and bookmark for a conventional book of the type having a book spine holding a plurality of book leaves having like width and like length dimensions and forming pages of the book, comprising,

a. a pair of substantially parallel prongs emanating from a common juncture and separated from each other,

b. each of said prongs comprising two legs with one of said legs emanating from said common juncture and the other of said legs emanating from a reverse bend at the extremity of said prong opposite from said common juncture,

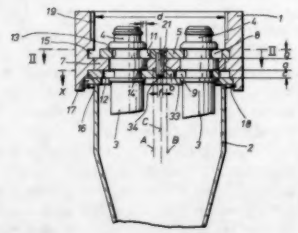
c. each of said other legs having a resilient arm adjacent the common juncture and extending outwardly at substantially right angles to said prongs, the respective arms being in a single plane with the prongs and extending in opposite directions to each other, and

d. each of said arms having a page engaging finger in said single plane and transverse to the respective arm, and at an effective distance from the associated prong for engaging the pages of immediate interest in manner to cooperate with said prongs and arms to hold said book open at said pages of immediate interest.

4,382,618
HYDRAULIC COUPLING DEVICE

Hans-Theodor Grisebach, Unna, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,084
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947855
Int. Cl.³ F16L 39/00
U.S. Cl. 285—137 R 28 Claims



1. A hydraulic coupling device for connection to a multi-line hose comprising a plurality of hydraulic conduits bunched together, the coupling device comprising:

(a) a casing, a plurality of plug pins having at least one circumferential groove, and means for holding the plug pins within the casing,

(b) each plug pin is connectable to a respective conduit of the multi-line hose,

(c) the holding means including at least two retaining discs which are displaceable with respect to each other and have groove engaging portions for tightly engaging within a groove of each plug pin,

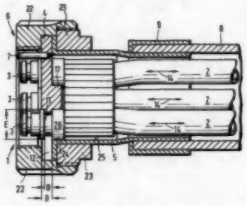
(d) said retaining discs being effective to axially fix the plug pins when said discs are displaced with respect to each other, and

(e) means for maintaining the discs in their displaceable relationship with respect to each other within said casing.

4,382,619
HYDRAULIC COUPLING DEVICE

Hans-Theodor Grisebach, Unna, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,246
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003377
Int. Cl.³ F16L 39/00
U.S. Cl. 285—137 R 8 Claims



1. A hydraulic coupling device for connection to a multi-line hose having a plurality of hydraulic conduits bunched together, the coupling device comprising a casing for housing a plurality of plug pins and a retaining disc, the plug pins each being connectible to a respective conduit of the multi-line hose, each of the plug pins having a circumferential external groove, the retaining disc having a plurality of radial retaining slots for receiving said plug pins, each of said retaining slots having a first portion whose width is greater than the maximum external diameter of the associated plug pin, and a second portion whose width is less than that of the maximum external diameter of the associated plug pin but which is greater than the diameter of the circumferential groove in that plug pin, and means associated with said casing for removably fixing said retaining disc therein and for radially confining said plug pins at locations at which they are held against axial movement relative to said retaining disc as a consequence of their external grooves being mechanically engaged within the second portions of their respective radial slots in the retaining disc.

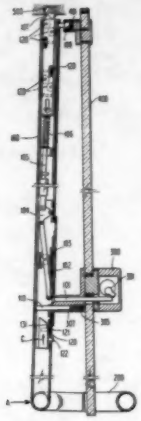
4,382,620
PANIC HANDLE FOR DOORS

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 152,403, May 22, 1980. This application Sep. 8, 1980, Ser. No. 185,375
The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.
Int. Cl.³ E05C 1/14
U.S. Cl. 292—92 17 Claims

1. A door and panic handle combination comprising a bar along and carried by the inside of the pivot means allowing limited pivotal movement of the bar between positions toward and away from the door; said bar having a latch mechanism longitudinally disposed therein and terminating in a latch bolt at the end of the bar adjacent said door edge; a stationary

actuator post carried by said door at a location along said door spaced from said pivot mounting means and operationally engagable with said latch mechanism for movement of said



latch mechanism between latched and unlatched positions as said bar is moved correspondingly between respective positions away from and toward said door.

4,382,621

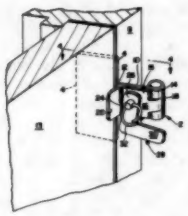
DOOR LATCH

Albert C. H. Lum, Honolulu, Hi., assignor to D.S.L. Inc., Honolulu, Hi.

Continuation-in-part of Ser. No. 106,012, Dec. 21, 1979, Pat. No. 4,311,330. This application Jun. 17, 1980, Ser. No. 160,282

Int. Cl.³ E05C *3/04*

U.S. Cl. 292—210 **4 Claims**



1. A door latch, comprising:

a mounting plate adapted to be secured against the frame of an inwardly-opening door and an extension adapted to extend inwardly away from the door frame,

a latch comprising an arm having one end pivoted to the mounting plate extension and a flange on the opposite end thereof, said latch being pivotal between a normal door-blocking position in which said arm lies adjacent said plate expansion and said flange is disposed in the swing path of the door, and a door-unblocking position in which said flange lies clear of the swing path of the door, and

a latch retainer comprising a flat strip having one end connected to said arm and another end removably engageable between the door edge and the door frame, thereby preventing pivotal movement of the latch to its door-unblocking position,

said latch retainer being substantially L-shape, said one end thereof being one leg of the L and the mounting thereof on said latch arm being a pivot, the other end of the latch retainer being the other leg of the L,

the latch arm and flange being of flat plate material and the flange extending at substantially 90° with respect to the latch arm,

the pivotal mounting of said latch retainer comprising a pintle extending outwardly from the latch arm in the same direction therefrom as the flange, said one leg of said latch retainer having a hole through which said pintle engages.

4,382,622

DOOR LOCK FOR VEHICLE

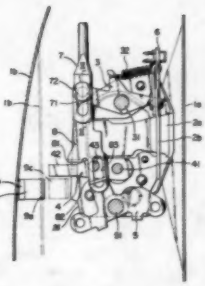
Yoshiaki Ishikawa, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 6, 1980, Ser. No. 147,249

Claims priority, application Japan, May 10, 1979, 54-57539

Int. Cl.³ E05C *3/06*

U.S. Cl. 292—216 **13 Claims**



1. A door lock for a vehicle having a door latch engageable with a striker mounted on the vehicle body in a latched position comprising:

an outer panel having a projecting member extending inwardly therefrom;

an inner panel member;

latching-releasing means positioned between said inner and outer panel members operatively connected to said door latch; and

projection means operatively associated with said latching-releasing means for engagement with said projecting member for releasing said latching-releasing means from a latch position upon inward deflection of said outer panel.

4,382,623

APPARATUS FOR RETRIEVING FLUID PLUG

Charles N. Richardson, New London, Tex., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Division of Ser. No. 179,487, Aug. 19, 1980, Pat. No. 4,314,608, which is a continuation-in-part of Ser. No. 158,889, Jun. 12, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,388

Int. Cl.³ E21B *31/18*

U.S. Cl. 294—86.32 **1 Claim**

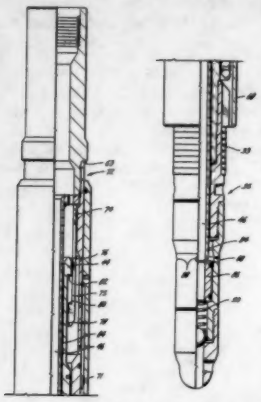
1. A retrieving mechanism adapted to retrieve a retrievable fluid plug from a well bore, said plug having a central bore extending vertically therethrough, a downwardly and outwardly facing latch receiving surface located in surrounding relationship to the upper portion of said bore and slide valve means in the lower portion of said bore for selectively permitting or blocking fluid communication between said bore in said plug and said well bore, said retrieving mechanism comprising:

a generally cylindrical body having a fluid passageway extending vertically therethrough and threaded at its upper end for connection to a tubing string;

latch means adapted to engage said retrievable fluid plug for retrieving the same from a well bore,

said latch means comprising a plurality of downwardly extending resilient latch fingers adapted to be received in surrounding relationship to the upper end of said retrievable fluid plug, each of said latch fingers having an upwardly and inwardly facing shoulder adapted to resiliently engage said downwardly and outwardly facing latch receiving surface on said retrievable fluid plug; and

a depending stinger on the lower end of said retrieving mechanism adapted to be received within the vertical bore of said retrievable fluid plug to engage and actuate said slide valve means in said retrievable fluid plug, whereby fluid pressure may be equalized across said retrievable fluid plug prior to removing the same from the well bore.



4,382,624

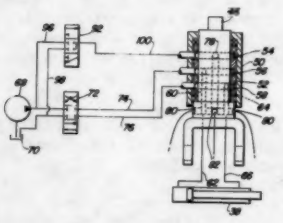
GRAPPLE PIVOT SNUBBER

George P. Lysenko, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 15, 1980, Ser. No. 216,099

Int. Cl.³ B66C *1/00*

U.S. Cl. 294—88 **4 Claims**



1. In a grapple arm support structure including a boom, an upright shaft rotatably supported from the boom, a grapple arm support frame, and a double clevis connected between the shaft and the frame and establishing first and second horizontal pivot axes extending crosswise to each other for the support frame to swing about, a snubber assembly for resisting the swinging movement of the grapple frame about the horizontal axes comprising: said upright shaft being provided with passage means; hydraulic hose means having first end means connected to said passage means and having second end means dead-end connected to the grapple frame such that the hose means is located in substantially intersecting relationship to the first and second horizontal pivot axes; and hydraulic fluid supply means connected to the passage means for selectively pressurizing and thus stiffening the hose means whereby the pressurized hose means resists pivoting of the grapple frame about said axes.

4,382,625

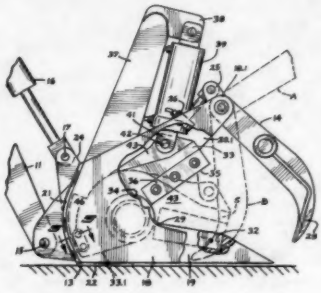
GRAPPLE SHEAR

Roy E. LaBounty, 1607-8th Ave., Two Harbors, Minn. 55616

Filed Jan. 13, 1981, Ser. No. 224,663

Int. Cl.³ B66C *1/10*

U.S. Cl. 294—104 **9 Claims**



1. A grapple shear for attachment onto the boom of a vehicle to reduce and handle lengths of scrap metal, comprising

a lower jaw adapted for mounting on the boom of the vehicle and having forwardly projecting tine means to be capable of moving forwardly along the ground, the tine means including a lower tine with a top cutting edge extending toward the forward tip of the tine,

a powered upper jaw with mounting means swingably connected to the lower jaw at a location above said tine means, the upper jaw having a pair of spaced tines which swing along said lower tine and receives said lower tine therebetween, and

a powered shear blade lying along said lower tine and swingably mounted on the tine to swing downwardly along said top cutting edge in a shearing motion, the shear blade also swinging upwardly to cooperate with the lower tine in defining a scrap reducing shear with a forwardly opening angular bight into which such lengths of metal scrap are pushed, are oriented transversely of the lower tine and shear blade, and are held by the tines of the upper jaw.

4,382,626

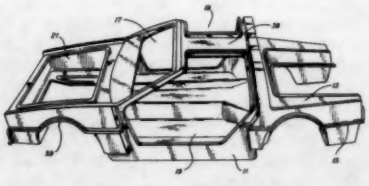
ATTACHMENT OF A STAINLESS STEEL OUTERBODY TO A GLASS REINFORCED PLASTIC INNER BODY

Colin R. Spooner, Norfolk, England, assignor to Delorean Research Limited Partnership, Bloomfield Hills, Mich.

Filed Mar. 11, 1981, Ser. No. 242,467

Int. Cl.³ B60P *3/03*

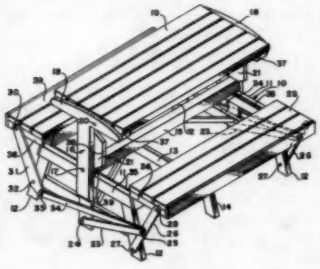
U.S. Cl. 296—31 P **12 Claims**



1. A structure comprising:

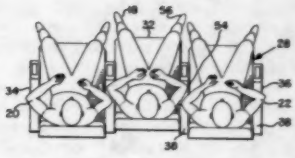
(a) an inner molded plastic body made of glass reinforced plastic;
(b) an outer shell of at least one panel of sheet metal affixed thereto;
(c) channels formed in said molded plastic body for receiving in-fill panels;
(d) at least one in-fill panel attached to said inner body and extending out therefrom, said in-fill panel having generally an "L" shape, the base of said "L" adapted to rest in said channel with the other portion of said "L" shaped panel projecting therefrom and providing a surface to which said sheet metal may be connected; and
(e) means connecting said sheet metal to said in-fill panel.

4,382,627
CONVERTIBLE PICNIC TABLE AND BENCH
Leonard F. Dean, Rte. 2, P.O. Box 580, Bainbridge, Ga. 31717
Filed Jul. 7, 1980, Ser. No. 165,859
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—124 **10 Claims**



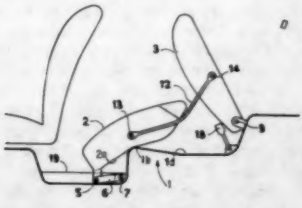
1. A convertible picnic table and bench comprising a central supporting base having opposed spaced sides, and beam means joining said sides, a pair of arms respectively pivotally mounted on outwardly of the outer surfaces of said sides, said arms being swingable relative to and outwardly of the base in substantially vertical planes, a pair of bench sections moveably engaging the supporting base on opposite sides of said arms, driving connecting means between said arms and bench sections operable to shift the bench sections toward and away from each other in unison responsive to swinging movement of said arms on said base said bench sections being receivable by their edges, on the upper surfaces of said sides when said bench sections are adjacent to each other, a combined table top and back rest element pivotally attached to and carried by the outer end portions of said arms above the supporting base and bench sections, said combined top and back rest element being bodily movable with said arms relative to the supporting base, and a stop element fixed to at least one of said arms and including stop surfaces engageable with said combined table top and back rest element to position it selectively in a table top or back rest position relative to the arms and said bench sections, said stop element having another stop surface engageable with an opposing fixed surface to limit swinging of said arms in one direction.

4,382,628
STAGGERED SEATS IN SEATING UNITS FOR PASSENGER COMPARTMENTS
Curtis M. Palmgren, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
PCT No. PCT/US80/01097, § 371 Date Aug. 25, 1980, § 102(e) Date Aug. 25, 1980, PCT Pub. No. WO82/00618, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 25, 1980, Ser. No. 261,111
Int. Cl.³ A47C *15/00*; B64D *11/06*
U.S. Cl. 297—232 **2 Claims**



1. An improvement to conventional aircraft seating unit arrangement and construction for eliminating physical interference of shoulders and elbows between adjacent passengers comprising, in combination:
(a) a base structure for carrying a plurality of substantially identical seats;
(b) each of said seats mounted on said base structure in adjacent parallel and offset relationship to one another;
(c) said offset relationship being a measurement within a range of 2–8 cm;
(d) each of said seats including a seat cushion and a pivotal backrest; and
(e) three or more substantially identical armrest means of equal size mounted in parallel and aligned relationship to one another, and wherein each one of said armrest means is mounted on said base structure at each side of each of said seats whereby passengers are located in said offset relationship and shoulders of adjacent passengers are in juxtaposed nonoverlapping relationship and elbows of adjacent passengers are adjacently positioned on said armrest means between said adjacent seats in a noninterfering relationship.

4,382,629
CONVERTIBLE SEAT STRUCTURE FOR AN AUTOMOBILE VEHICLE
Armand Froumajou, Osny, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France
Continuation of Ser. No. 12,221, Feb. 14, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,097
Claims priority, application France, Mar. 20, 1978, 78 08017
Int. Cl.³ B60N *1/02*
U.S. Cl. 297—322 **10 Claims**



1. A convertible seat structure for an automobile vehicle and movable between an opened position for receiving a passenger

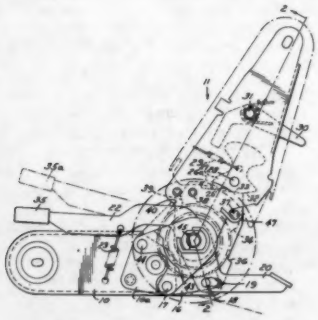
and a closed position and comprising a support, a seat, link means for connecting the seat to the support and for allowing the seat to be forwardly raisable relative to the support about a first transverse axis, a backrest, means for connecting the backrest to the support and for allowing the backrest to be swung over forwardly relative to the support about a second transverse axis, at least one connecting bar pivoted to the seat and to the backrest to ensure that the movements of these two elements are simultaneous, and constraining means for controlling the orientation of the seat in the course of moving the seat structure between said two positions thereof, said link means including at least one link mounted adjacent a first end of the link on the support with the link pivotable about a third transverse axis relative to the support, the first transverse axis being disposed adjacent a second end of the link opposed to said first end of the link, the seat being pivotably connected to the link at the second end of the link, the link having a substantially vertical orientation when the seat structure is in said opened position, and said constraining means being operative, in a first stage of moving the seat structure from said opened position to said closed position thereof, to constrain the seat to move initially in a substantially horizontal direction while maintaining the seat in a substantially constant orientation thereof and thereafter to constrain the seat to swing upwardly and forwardly relative to the support about said first axis.

4,382,630

COMBINATION ADJUSTMENT SEAT BACK HINGE FITTING

Allen H. Weston, Marshall, Mich., assignor to Keiper U.S.A., Inc., Mich.

Filed May 6, 1981, Ser. No. 261,015
Int. Cl.³ A47C *1/025*
U.S. Cl. 297—362 **17 Claims**



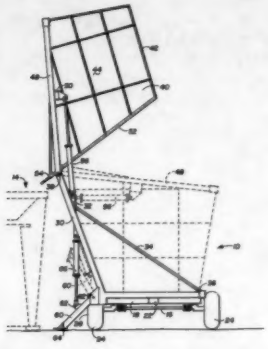
1. A hinge fitting for adjustably connecting a seat and a back rest comprising a seat hinge member, a back rest hinge member, a pivotal connection between said members, means limiting a range of adjustment for the operative relation of said members between maximum forward and maximum rearward positions of said back rest hinge member, manually releasable toothed ratchet and pawl means for permitting quick adjustment to an approximate fixed operative relation within said range, and manually adjustable taumel means for gradually effecting a precise fixed operative relation at any desired position, said respective means including in combination means accommodating quick adjustment from either extremity of said range to any intermediate or other extremity position regardless of the prevailing taumel adjustment.

4,382,631

STABILIZED DUMP TRAILER

Don R. Johnson, Wolfforth, Tex., assignor to Harris & Thrush Manufacturing Company, Wolfforth, Tex.

Filed May 18, 1981, Ser. No. 264,341
Int. Cl.³ B60P *1/16*; B60S *9/12*
U.S. Cl. 298—17 SG **2 Claims**



1. A seed cotton transport having
a. a running gear,
b. a stanchion side of the running gear, and
c. a brace side of the running gear,
d. a frame as a part of the running gear,
e. a plurality of ground engaging wheels on the frame,
f. a tongue on the running gear,
g. two stanchions extending upward from the frame on the stanchion side,
h. a pivot point at the top of each stanchion,
i. an ear on the upper portion of each stanchion below the pivot point,
j. a brace running from each ear to the brace side of the frame,
k. a basket,
l. a flat bottom on the basket which seats upon the frame when the basket is in the transport position,
m. a brace side on the basket extending upward from the bottom,
n. a front and back end to the basket extending upward from the bottom,
o. a structural member extending along the top of each the front and back end of the basket,
p. a cylinder pad on the lower side of each structural member,
q. said cylinder pad being at about the mid-point of each structural member,
r. a sloping side of the basket extending upward from the bottom,
s. said sloping side on the stanchion side of the running gear,
t. a top edge of the sloping side pivoted to the stanchions at the pivot point of the stanchions,
u. said pivot point of the stanchions being outboard of the wheels on the stanchion side of the running gear, and
v. a dump hydraulic cylinder extending from each ear on the stanchion to the pad on the structural member on the end of the basket,

wherein the improvement comprises:

w. a forward stabilizing strut pivoted to the stanchion side of the frame at the front thereof, and
x. an after stabilizing strut pivoted to the stanchion side of the frame at the rear thereof,
y. a forward stabilizing hydraulic cylinder having one end connected to about the midpoint of the forward stabilizing strut and the other end connected to about the midpoint of the forward stanchion,

z. an after stabilizing hydraulic cylinder having one end connected to about the midpoint of the after stabilizing strut and the other end connected to about the midpoint of the after stanchion,

aa. a source of hydraulic fluid under pressure,

bb. a control valve connected to the source of hydraulic pressure,

cc. an extension hydraulic line extending from the control valve to one side of the two dump cylinders and the two stabilizing cylinders,

dd. a retraction hydraulic line extending from said control valve to the retraction side of the two dump hydraulic cylinders and the two stabilizing hydraulic cylinders, and

ee. a restriction valve in said extension hydraulic line adjacent to said control valve, including

(i) a valve seat,

(ii) a valve member adapted to seat on said valve seat,

(iii) said valve member having a restricted passageway there through, so that

(iv) a full flow of hydraulic fluid will pass from the valve to the extension hydraulic line, and only a restricted flow of hydraulic fluid will pass from the extension hydraulic line to the control valve.

4,382,632

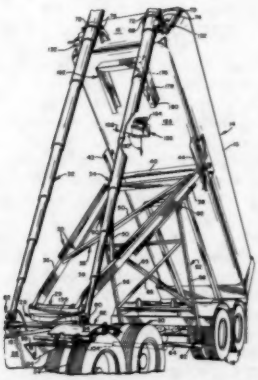
DUMPING VEHICLE STABILIZER SYSTEM

Charlie C. Pitts, 732 Blue Fathom Dr., Bridgeport, Tex. 76026

Filed Jun. 10, 1982, Ser. No. 386,972

Int. Cl.³ B60P *1/16*

U.S. Cl. 298—17 S **6 Claims**



1. A stabilizer system for a rear dumping vehicle of the type including a trailer supported by at least one wheeled rear axle and a tractor unit for towing the trailer, the trailer including a dump body pivotally mounted about an axis parallel with one of its wheeled rear axle(s), the tractor unit including at least one driven wheeled rear axle assembly and a fifth wheel towing assembly associated with a rigid chassis, the system comprising:

linkage means coupling said trailer to said fifth wheel assembly;

first and second spaced-apart ram means for tilting said dump body, each of said ram means comprising telescoping, hydraulic cylinders attached at one end to the front of said dump body, and pivotally terminating at opposite ends in pressure plate means adapted to contact at least one of said driven, wheeled rear axle assemblies of said tractor during tilting of said dump body;

first hydraulic sub-circuit means for selectively actuating said first ram means;

second hydraulic sub-circuit means for selectively actuating said second ram means;

primary hydraulic circuit means for supplying hydraulic pressure to said first and second hydraulic sub-circuit means;

first solenoid valve means communicating with said primary hydraulic circuit means for actuating said first hydraulic sub-circuit means;

second solenoid valve means communicating with said primary hydraulic circuit means for actuating said second hydraulic sub-circuit means;

pendulum control means for leveling said dump body during tilting of said dump body by actuating that solenoid valve means activating the ram means on the lowest side of said chassis whereby to level the dump body as it is tilted; and,

said pressure plate means comprising a plurality of spaced-apart, tire contacting rollers for permitting maneuvering of said tractor and thus said trailer when said dump body is being tilted.

4,382,633

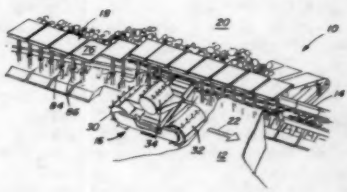
LONGWALL MINING SYSTEM

Jonathan E. Ludlow, Arlington, Mass.; Cecil V. Peake, Bethlehem, Pa., and Paul J. Guay, Stoughton, Mass., assignors to Foster-Miller Associates, Inc., Waltham, Mass.

Filed Feb. 24, 1981, Ser. No. 237,623

Int. Cl.³ E21C *27/24, 29/02*

U.S. Cl. 299—33 **15 Claims**



1. A longwall mining system for mining an underground mineral deposit and loading the mined material on a face conveyor, said system comprising:

(a) a shearer with at least one rotatable drum and carrying means, said drum having a plurality of picks disposed about its surface for cutting the material to be mined, a plurality of vanes mounted in axial rows on the surface of said drum for carrying the cut material on the drum, said carrying means mounted adjacent said drum for receiving the material cut by said picks and carried by said vanes; and

(b) roof supporting means operative to support the roof of a mine adjacent said shearer.

4,382,634

MATERIAL FRACTURING APPARATUS

Lawrence E. Fox, Peoria; Harold L. Reinsma, Dunlap, and Albert L. Woody, Peoria, all of Ill., assignors to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US81/00117, § 371 Date Jan. 26, 1981, § 102(e) Date Jan. 26, 1981, PCT Pub. No. WO82/02468, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 26, 1981, Ser. No. 275,084

Int. Cl.³ A01B *35/00*

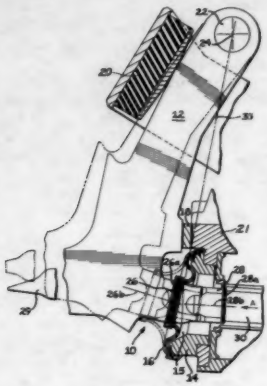
U.S. Cl. 299—37 **11 Claims**

1. An impact apparatus (10) for delivering intermittent impact blows comprising:

a housing (14);

a fracturing shank (12) reciprocatably mounted about a pivot axis (24), said shank (12) being reciprocatable along a reciprocation path and having a sealing portion (26), said sealing portion (26) having a cylindrical sealing surface (26*a*) disposed about a longitudinal axis (26*b*) which is perpendicular to a radial line (33) extending from said pivot axis (24); and

an annular seal (16) connected to said shank's sealing surface (26a) and said housing (14) to prevent ingress of foreign matter into said housing (14) and egress of lubricating



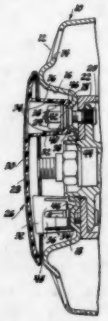
fluid from said housing (14), said seal (16) having a longitudinal axis (16a) and a flexible portion (40) which is bounded by an inner margin (46) which lies along said radial line (33).

4,382,635

PLASTIC VEHICLE WHEEL COVER

Trevor J. Brown, Rochester, and Neal S. Hakken, Union Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 13, 1981, Ser. No. 234,420
Int. Cl.³ B60B 7/06
U.S. Cl. 301—37 TP 2 Claims



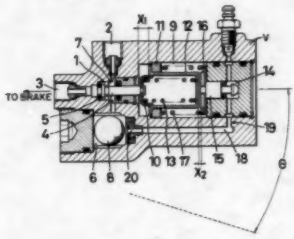
1. The combination comprising, a vehicle wheel mounted to a vehicle by a plurality of circumferentially spaced lug nuts, each lug nut including an annular outwardly opening groove, a plastic wheel cover covering the lug nuts and including a number of integral fastening means engageable with a respective number of lug nuts to retain the cover on the wheel, each fastening means comprising an integral elongated tubular extension extending axially of the cover and tapered from a basal end portion located adjacent the cover to an apical open end portion located axially inwardly of the cover, the basal end portion of each extension being continuous and the remainder of each extension being axially slotted to provide a plurality of fingers of arcuate lateral cross-section cantilevered from the basal end portion and having the sides thereof tapering to the apical end thereof, each finger including an integral abutment adjacent the apical end thereof, each extension receiving a respective lug nut therein with the fingers thereof flexing to permit insertion of the lug nut within the extension until the abutments of the fingers are received in the groove of the lug nut concurrently with engagement of the apical ends of the fingers with the adjacent portion of the vehicle wheel to thereby resiliently and releasably mount the wheel cover on the wheel.

4,382,636

DECELERATION-SENSITIVE BRAKE PRESSURE CONTROL DEVICE

Masato Yoshino, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 160,574, Jun. 17, 1980, abandoned.
This application Jan. 20, 1982, Ser. No. 341,149
Claims priority, application Japan, Oct. 29, 1979, 54-140602
Int. Cl.³ B60T 8/14
U.S. Cl. 303—6 C 4 Claims



1. A deceleration-sensitive brake pressure control device for a vehicle, comprising:

a valve body having a proportioning valve chamber for receiving brake fluid under pressure and supplying it to a brake;

a pressure proportioning valve in said proportioning valve chamber and having a valve seat and a plunger means movable relative to said valve seat in response to the pressure of the brake fluid;

said valve body having an inertia body chamber communicating with said proportioning valve chamber;

said valve body having a sealing chamber having an opening thereinto from said inertia body chamber;

an inertia body movable in said inertia body chamber in response to deceleration of the vehicle for closing the opening to said sealing chamber;

a piston means communicating with said sealing chamber and movable in response to the pressure in said sealing chamber;

a spring cage movably positioned between said plunger means and said piston means and normally spaced from said piston means a predetermined distance;

stop means for limiting the movement of said spring cage away from said plunger means;

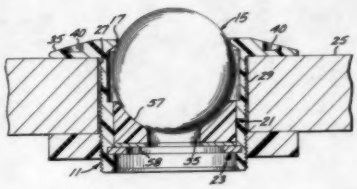
a first spring having one end engaging said plunger means and the other end engaging said spring cage and normally in compression when said spring cage is engaged with said stop means for urging said plunger means in the valve opening direction; and

a second spring having one end engaged with said piston means and having the other end blocked against movement relative to said valve body for resisting movement of said piston means toward said plunger means, whereby said piston means is moved to abut said spring cage and urge said spring cage and said plunger means to compress said first spring in the valve opening direction only after said piston means has moved toward said plunger means through the space between said piston means and said cage by compressing said second spring.

4,382,637
WEIGHT TRANSFER ROLLER APPARATUS

Robert V. Blackburn, 11542 Luzon St., Cypress, Calif. 90630, and Ian Blackburn, 16081 Gold Cir., Huntington Beach, Calif. 92647

Continuation-in-part of Ser. No. 84,996, Oct. 15, 1979, Pat. No. 4,285,550. This application Feb. 25, 1980, Ser. No. 124,534
Int. Cl.³ F16C 29/04
U.S. Cl. 308—6 R 16 Claims



1. Weight transfer roller apparatus for mounting on a platform and comprising:

a housing including an elongated cylindrical barrel having first and second ends, said barrel being formed with an interior cylindrical ball-receiving bore of a predetermined minimum diameter;

a retaining flange formed on said first end of said barrel defining a circular ball protrusion opening concentric with said bore and having a diameter smaller than said predetermined minimum diameter of said ball-receiving bore;

a roller ball received telescopically in said bore from said open second end and having a diameter less than said predetermined minimum diameter but greater than the diameter of said ball protrusion opening;

thrust bearing means received telescopically in said bore from said second end and including spherically shaped low friction concave socket means seated against said ball;

longitudinally compressible compression spring means interposed between said bearing means and retainer for compression when said ball is loaded to permit partial retraction of said ball into said bore; and

a retainer telescoped into the open end of said socket means and including releasable fastening means releasably engaging said barrel to hold roller ball captive between said thrust bearing means and said retaining flange whereby said housing may be mounted on said platform with said ball protruding therefrom for receiving the weight of loads transferred over said platform and when it is desirable to disassemble said apparatus said fastening means may be released and said retainer removed to free said thrust bearing means and roller ball for removal out the open end of said socket;

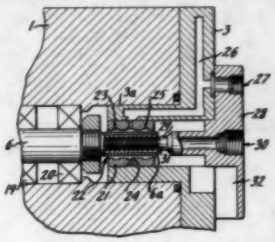
said barrel being formed at said second end with a counter bore having a diameter greater than the exterior diameter of said bearing means leading to an annular limit shoulder laterally aligned with said bearing means and facing toward said second end; and,

said compression spring means being formed with a cylindrical exterior and is telescopically received in said counter bore and includes a spring retainer ring having a diameter greater than that of said limit shoulder abutted on its periphery against said limit shoulder and held pressed against said shoulders by said retainer.

4,382,638
SEALING STRUCTURE OF SPINDLE DEVICE

Shigenori Asdoh, and Toshiharu Kogure, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Jun. 2, 1981, Ser. No. 269,621
Int. Cl.³ F16C 33/66
U.S. Cl. 308—187 4 Claims

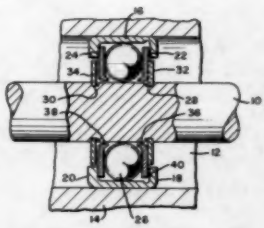


1. A sealing structure of a spindle device comprising: a spindle housing; a hollow spindle disposed in said housing and having a front portion projecting through a front wall of the housing and having a rear end portion disposed within said housing and being rotatably supported by bearing means provided inside said housing; a lubricating oil conduit projecting inwardly from a lubricating oil port provided at a rear wall of said housing and being loosely inserted into said spindle by an appropriate length; and sealing means for sealing the clearances between an outer periphery of said spindle and said housing including the clearance between the front end portion of the spindle and a front plate, and the clearance between the outer periphery of the spindle and the housing, said sealing means including a spiral recess provided at one or both of the outer periphery of the lubricating oil conduit and the inner periphery of the spindle, whereby an overflow of the lubricating oil from the clearances is restrained by a screw pump function caused by the spiral recess.

4,382,639
BI-DIRECTIONAL THRUST AND RADIAL BALL BEARING

Michael J. McGuffie, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 30, 1981, Ser. No. 248,698
Int. Cl.³ F16C 19/14
U.S. Cl. 308—189 R 3 Claims



1. A bi-directional thrust and radial ball bearing comprising: a pressed metal cup having a first end flange and a second end flange, a first pressed metal, annular thrust washer and a second pressed metal annular thrust washer axially spaced from said first thrust washer and loosely retained in the metal cup by the end flanges; and a plurality of balls adapted to be contacted by the annular thrust washers, the diameter of each ball and the thicknesses of the thrust washers being such that an axial force

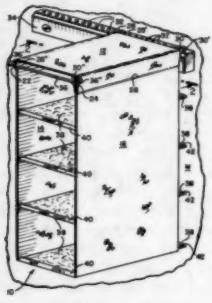
in one axial direction causes the first thrust washer to press the balls against the second thrust washer, which, in turn, is pressed against said second metal cup end flange to form an axial clearance between said first metal cup end flange and the first thrust washer, and an axial force in the other axial direction causes the second thrust washer to press the balls against the first thrust washer, which, in turn is pressed against said first metal cup end flange to form an axial clearance between said second metal cup end flange and the second thrust washer.

4,382,640

PORTABLE STORAGE SHELF UNIT

R. Paul Kashden, Hewlett, N.Y., assignor to Closet Systems Corp., Hewlett, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,378
Int. Cl.³ A61G *11/00*
U.S. Cl. 312—5 **11 Claims**



1. A storage device adapted to be removably supported on a wall provided with a wall mount comprising

(a) a housing having a top wall, a pair of sidewalls and bottom wall,

(b) a longitudinally extending passageway provided adjacent the juncture of said top wall and each of said sidewalls,

(c) a support rod extending through each of said passageways and adapted to be detachably supported at its rear end on said wall mount, and

(d) a cross member detachably interconnected to the front ends of said support rods for maintaining the latter is substantially parallel spaced relation,

(e) said cross member, support rods and wall mount being detachable each from the other and defining, when interconnected to each other, a rectangular support frame for suspending said housing from said wall mount.

4,382,641

SEWING MACHINE STORAGE CABINET

Donald Abel, Morton, Ill., assignor to Morton Glass Works, Morton, Ill.

Filed Sep. 10, 1980, Ser. No. 185,976
Int. Cl.³ A47B *29/00, 77/10*
U.S. Cl. 312—21 **17 Claims**

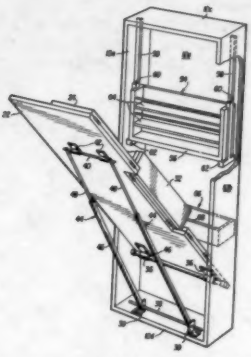
1. A sewing machine storage cabinet comprising:

a. a cabinet portion;

b. a table having one end attached to said cabinet portion and being movable from a generally horizontal operative position to a generally vertical storage position where it is located within said cabinet by moving a distal end of the table upwardly causing the table to pivot about a generally horizontal axis and vice versa;

c. a sewing machine pivotally attached to said table such that it is pivotable with respect to said table about a generally horizontal axis between an upright, operative position and a storage position in which it lies against said table; and

d. support means connected between said cabinet portion and said table to support said table when it is in its operative position, said support comprising at least one compressible and extendable member pivotally connected to said cabinet portion and to said table.

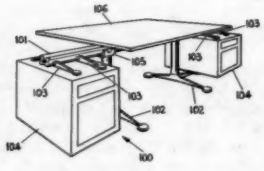


4,382,642

BEAM FURNITURE SYSTEM

Bruce A. Burdick, 1620 Montgomery St., San Francisco, Calif. 94111

Filed Sep. 29, 1980, Ser. No. 192,079
Int. Cl.³ A47B *27/00*
U.S. Cl. 312—194 **28 Claims**



1. In an office furniture system adapted to provide a plurality of furniture arrangements structurally variable in accordance with functional requirements of users of said furniture arrangements, said furniture system comprising:

a plurality of functional furniture components comprising variously sized work surfaces, storage files, desk files and trays;

furniture support means for supporting and positioning in differing relative spacial arrangements selective components of said plurality of functional furniture components;

pedestal means for supporting said furniture support means in a horizontal plane at a selectible working height relative to a ground level; and

bracket assemblies for connecting each of said furniture components to said support means;

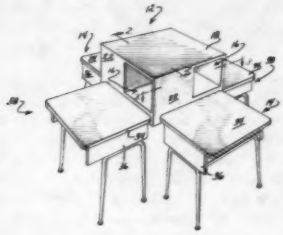
characterized in that

said furniture support means comprises a horizontally disposed first linear support beam having a plurality of radially extending flanges and said bracket assemblies are removably clampable to at least two of said radially extending flanges.

4,382,643
DESK STORAGE DEVICE

Richard H. Heinrich, 2614 Wood St., Elkhart, Ind. 46514

Filed Sep. 30, 1980, Ser. No. 192,618
Int. Cl.³ A47B 19/00, 41/00
U.S. Cl. 312—195 4 Claims



1. In combination, a desk storage device and two desks; said device including a central body defined by four lateral sides, a top, and a bottom; at least two of said sides having a compartment formed therein; each desk including a top; said desks being spaced apart with the tops thereof in an opposed relationship; said desks supporting said device between the tops of the desks with a said compartment located opposite a desk top for storage, each side of said body having a compartment formed therein; each compartment being formed by a top, a bottom, two side walls and a rear wall; in each compartment one of said side walls forms one of said lateral sides and the other of said side walls forms the rear wall of another compartment.

4,382,644
BEARING DEVICE FOR SLIDING PANELS, PARTICULARLY FOR A PIECE OF FURNITURE

Onorato Brivio, Meda, and Attilio Brivio, Figino Serenza, both of Italy, assignors to Brivio Industria Mobili di Brivio Onorato e Attilio S.d.f., Novedrate, Italy

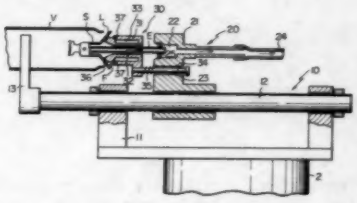
Filed Jul. 29, 1980, Ser. No. 173,657
Claims priority, application Italy, Aug. 2, 1979, 24859 A/79
Int. Cl.³ A47B 88/00; E05C 19/06
U.S. Cl. 312—334 6 Claims

1. A bearing device for sliding panels particularly for furniture, which comprises: two sections (4) fixed at one end thereof at the upper cross-bar and at the other end thereof at the lower cross-bar of the piece of furniture respectively, by hinge means; a telescopic sliding guide (5) fixed to each of said sections (4) on the side where the panel (2) is located, said panel being slidably fixed to said telescopic guide; means, (11, 13) for stopping the rotations of the sections, placed substantially at the end of said sections which is opposite to the hinge means; elastic return means (22) connected at one end thereof to a fixed portion (20) of the piece of furniture and, at the other end, to a pin (24) set in said sections (4), said elastic means being adapted to place and retain the panel (2) in its closed and open positions respectively, wherein the elastic means comprise a spring (22), a small shaft (17) supporting said spring, said shaft being rotatably set in a plane substantially parallel to the plane of rotation of the sections (4), said shaft having one end rotatively connected around a portion (20) of a pin (11), perpendicular to the plane of rotation of said sections (4), the other end being slidingly set within a pin (24), parallel to said pin (11), said pin (11) being rotatively set around its longitudinal axis in said sections (4).

4,382,645
APPARATUS FOR SEALING LAMP MOUNT TO LAMP TUBE

Masatoshi Hayakawa, Nagoya, and Masahiro Tanioka, Komaki, both of Japan, assignors to CKD Corporation, Komaki, Japan

Filed Aug. 15, 1980, Ser. No. 178,629
Claims priority, application Japan, Jan. 21, 1980, 55-5467
Int. Cl.³ H01J 9/46
U.S. Cl. 445—69 4 Claims



1. An apparatus for sealing a lamp mount having a coil mounted thereon to an end of a lamp tube, comprising:

a rotatable member;

horizontal support means on the other periphery of said rotatable member;

chuck means for releasably holding a lamp tube and mounted on an end said horizontal support means;

an evacuator body slidably mounted on said support means and having a vacuum chamber therein into which an end of an evacuator pipe forming part of said lamp mount is sealably insertable; and

burner means for heating the flare of a lamp mount and an end of a lamp tube held by said chuck means, said burner means including a burner body disposed between said chuck means and said evacuator body and having a burner tank and a number of burner nozzles therein directed for heating the flare and the end of the lamp tube, at least one rod axially slidably mounted in said evacuator body for movably mounting said burner body on said evacuator body for movement toward and away from said chuck means, and means for biasing said burner body toward said chuck means with respect to said evacuator body.

4,382,646
METHOD FOR REMOVING GASES CAUSED BY OUT-GASSING IN A VACUUM VESSEL

Paul B. Sunde, Northridge, Calif., assignor to Radcal Corporation, Monrovia, Calif.

Filed Nov. 13, 1980, Ser. No. 206,383
Int. Cl.³ H01J 9/39
U.S. Cl. 445—41 6 Claims

1. For use with a vacuum vessel having temperature-sensitive materials therein, a method of reducing out-gassing in said vessel by installing an activated getter in said vacuum vessel and sealing said vacuum vessel, while maintaining a vacuum therein, said method comprising the steps of:

(a) placing the vacuum vessel in a vacuum chamber;

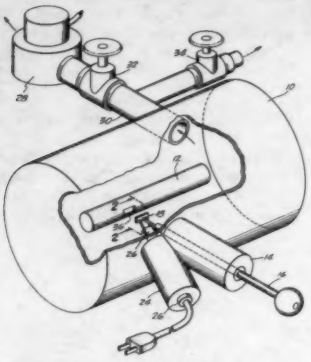
(b) placing the getter in said vacuum chamber;

(c) providing a vacuum within said vacuum chamber;

(d) applying heat to the getter, said getter being thereby activated;

(e) reducing the temperature of the getter to a level which

would not damage the temperature-sensitive materials in said vacuum vessel;



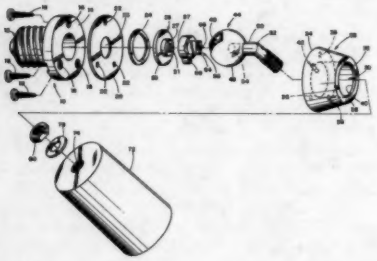
(f) placing the getter into the vacuum vessel; and,
(g) sealing the vacuum vessel.

4,382,647

SWIVEL UNIT FOR ADJUSTABLE LIGHTING FIXTURE

Gary Paley, Cornwall-On-Hudson, N.Y., assignor to Square D Company, Palatine, Ill.

Filed Nov. 6, 1980, Ser. No. 204,434
Int. Cl.³ F21M *3/18*
U.S. Cl. 339—7 **8 Claims**



1. An improved environmentally sealed and manually controlled swivel unit comprising:

a base for establishing electrical and mechanical connection with a source of electrical power and having an aperture with a predetermined diameter;

a housing having a central housing bore defining an inner surface, said housing having a first end for attachment to said base and a second end, said housing also having a guide pin extending radially inward a predetermined distance from said inner surface near said first end;

means for attaching said base to said housing;

a swivel ball device having a spherical body with a predetermined rectangular cavity completely disposed within said housing and a tube extending radially from said spherical body and opposite to said cavity, said spherical body having a tunnel connecting said tube to said cavity, said spherical body also having a predetermined diameter substantially equal to the diameter of said central bore in said housing, said swivel ball being contained inside of said housing;

means for sealing said swivel ball device within said housing at said second end;

a minimum friction swivel ball controller completely disposed within said housing having a circular body member, said controller also having a square cavity guide extension centrally located on a first side of said body member, and a circular cavity located on a second side of said body member, said body member, said circular cavity and said cavity guide extension having a central controller bore, said swivel ball controller also having a stop wall extending from the edge of said circular body member, said swivel ball controller being located in said central housing bore near said first end such that said cavity guide extension rides in said cavity in said swivel ball device and said guide pin in said housing rides in the same plane as said stop wall;

a circular minimum friction plate having a circular disc with a diameter substantially equal to the diameter of said central housing bore and also having first and second circular extensions located on opposite sides of said disc, said first and second extension and said disc having a central aperture, said first circular extension having a diameter substantially equal to said circular cavity in said swivel ball controller and said second circular extension having a diameter substantially equal to said aperture in said base; and

a tension means completely disposed within said housing for forcing said swivel ball controller against said swivel ball device and for forcing said swivel ball device against said sealing means of said housing thereby defining a predetermined lamp-holding force, said tension means being located between said circular plate and said base when said base is attached to said first end of said housing,

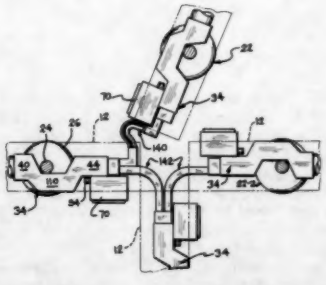
wherein said swivel ball controller allows said swivel ball device to rotate about a first axis and to rotate about a second axis perpendicular to said first axis without exposing the cavity or wiring contained therein to the environment, and also wherein said swivel ball device and said sealing means form an environmentally sealed juncture regardless of the position or orientation of the lamp, and further wherein said predetermined lamp holding force retains said swivel ball device at any selected position while allowing easy manual movement of said swivel ball device.

4,382,648

ELECTRICAL ENERGY SUPPLY SYSTEM FOR WORK STATIONS IN A SPACE DIVIDER SYSTEM

Robert L. Propst, Ann Arbor, and Travis M. Randolph, Saugatuck, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 825,655, Aug. 18, 1977, abandoned.
This application Jan. 11, 1979, Ser. No. 2,608
Int. Cl.³ H02G *3/00, 3/06*
U.S. Cl. 339—18 P **17 Claims**



1. In a space divider system which includes a plurality of upright wall panels arranged end-to-end so as to form at least one work station and wherein said panels have upright ends and lower edges and are mounted on downwardly extending leg supports located adjacent said panel ends so as to form a

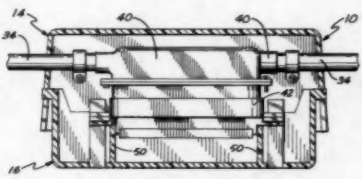
space below each of the panel lower edges, an electrical energy supply system for said work station comprising a plurality of connected sections each corresponding to a wall panel forming said station, each section comprising a pair of connector assemblies located in said space and each comprising a connector body and a plurality of terminal units in said body, said body being mounted on one of said leg supports so as to extend substantially to the adjacent end of the corresponding panel, electrical conductors disposed in said space and extending between and connecting the terminal units in the connector bodies at each end of the panel, the terminal units on one panel being constructed to interfit with the terminal units on another panel in said station to enable the transfer of electrical energy from the energy supply section for one panel to the energy supply section for another panel, and at least one receptacle outlet interfitted with the terminal units in one of said connector assemblies and mounted on the connector body in said one assembly.

4,382,649

MULTIPLE CABLE CONNECTOR BOX

Daniel Meyer, Rochester, Minn., assignor to Communication Systems, Inc., Hector, Minn.

Filed Jan. 12, 1981, Ser. No. 224,130
Int. Cl.³ H01R *13/506*
U.S. Cl. 339—39 **3 Claims**



1. A multiple cable connector box for conductively connecting a plurality of multi-conductor cables, each cable having a first multi-contact connector, for conductive connection with a plurality of second multi-contact connectors, the second multi-contact connectors having flange portions at each end, the cable connector box having:

an upper half and lower half with the lower half including a lug positioned at opposite ends with each lug having male portions extending outwardly therefrom and with the upper half having a pair of opposite facing flexible side walls with latch portions overlapping the lower half, each latch portion having a cut-away to receive a corresponding male portion of each lug for attachably connecting the lower half with the upper half;

a plurality of openings defined in opposite ends of the upper half;

a plurality of supports mounted within the lower half, each support having a plurality of integral flexible prongs and each prong engaging a flange portion of only one multi-contact connector and the prongs positioned to attachably retain the second multi-contact connectors against the supports in one of a plurality of positions, each position being with the longitudinal axis of the connectors generally in alignment with the openings in each end of the box;

each multi-conductor cable connectable to a corresponding second multi-contact connector and extending into the box through a corresponding end opening, the corresponding end opening aligned with the corresponding second multi-contact connector; and

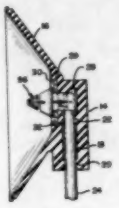
a separate removable covering means to cover each of the openings in the box not having a multi-conductor cable extending therethrough.

4,382,650

ANODE CONNECTOR

Henry O. Herrmann, Jr., Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 2, 1981, Ser. No. 230,845
Int. Cl.³ H01R *11/22, 15/12*
U.S. Cl. 339—60 R **6 Claims**



1. An anode connector for terminating a high voltage lead comprising:

a housing of flexible insulative material having a first portion defining a high voltage lead receiving bore, a second integral flange portion with an axis which intersects said bore, and a terminal cavity within said flange portion and opening into said bore; and

a terminal received in said cavity directed along said axis, said terminal having a base with a pair of side walls extending substantially normal from opposite sides of said base, a profiled slot in each said sidewall, a plate member to engage a high voltage lead extending through said bore, said plate member having a pair of tines defining an insulation piercing, conductor engaging slot therebetween, edge portions of said plate member received in respective slots of said sidewalls, and means on the free ends of said side walls to engage an anode whereby said tines of said plate member pierce insulation of a high voltage lead to engage a conductor thereof in said slot with edge portions of said plate member engaging in respective slots of said sidewalls.

4,382,651

TRANSFORMER BAR CONNECTOR

John J. Klosin, and Eugene W. McGrane, both of Ormond Beach, Fla., assignors to Homac Mfg. Company, Ormond Beach, Fla.

Filed Jul. 18, 1980, Ser. No. 170,142
Int. Cl.³ H01R *4/30*
U.S. Cl. 339—92 R **6 Claims**

1. A bar connector for connection to a transformer bushing having a threaded stud which terminates in a chamfer comprising

a connector body including cable attachment means;

a first internally threaded bore hole in one end of said body for mating with said threaded stud;

a second internally threaded bore hole in said body substantially perpendicular to said first bore hole and intersecting said first bore hole at the inner end therefor; and

a set screw terminating in a substantially conical end surface secured within said second bore hole;

said conical end surface of said set screw bearing against said

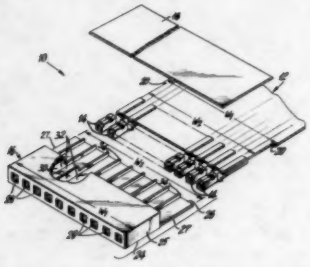
chamfer of said threaded stud when the connector is in place on said bushing, thereby locking said connector to said bushing.

4,382,652

STACKABLE FLAT CONDUCTOR CABLE CONNECTOR ASSEMBLY

William Y. Sinclair, Stockton, N.J., assignor to Aries Electronics, Inc., Frenchtown, N.J.

Filed Jan. 19, 1981, Ser. No. 226,164
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **12 Claims**



1. A stackable flat conductor cable connector assembly comprising:

a flat conductor cable having a plurality of uniformly spaced electrical contacts extending from one end thereof, with the width of the flat conductor cable adjacent said contacts being tapered relative to the remainder of the flat conductor cable;

a generally planar insulator block having a housing portion and a tongue portion, said housing portion receiving said electrical contacts and including a corresponding plurality of apertures therein, said tongue portion being contiguous to said tapered portion of the flat conductor cable and being of a width corresponding to the width of the tapered portion of said flat conductor cable; and

strain relief adhesive tape securing said flat conductor cable to said tongue portion of said insulator block in such manner that the total width of the flat conductor cable connector assembly is equal to or less than the width of said housing portion whereby a plurality of said flat conductor cable connector assemblies may be stacked in a generally aligned, planar array, with the spacing between the apertures of adjacent flat conductor cable connector assemblies substantially corresponding to the uniform spacing between apertures in the housing portion of each insulator block.

4,382,653

CONNECTOR

Linden O. Blanchard, North Andover, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed Dec. 4, 1980, Ser. No. 212,821
Int. Cl.³ H01R *13/46, 13/648*
U.S. Cl. 339—143 R **7 Claims**

1. Connector apparatus comprising:

(a) at least one insulated electrical conductor, having a braided wire shield disposed along the length of the insulated conductor;

(b) a planar electrically conductive member, having at least one hole disposed on the planar surface of said member;

(c) a first tubular electrically conductive element adapted to be mechanically held in said hole in low-ohmic contact with said planar member, the inner diameter of said first element being large enough to enable the insulated conductor to pass through;

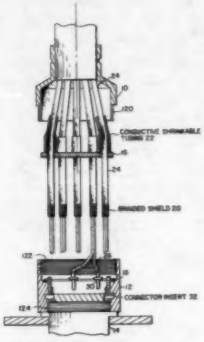
(d) connecting means for electrically connecting the braided wire shield directly to the first element and thereby directly on said planar conductive member;

(e) a support member disposed coaxial around the planar conductive member; and

(f) fastener means for rigidly affixing the periphery of said conductive member in low-ohmic contact with the support member.

5. The method of grounding the wire shields on insulated conductors to a connector having a connector insert positioned in the body of the connector comprising the steps of:

(a) stripping the wire shield to an appropriate length and exposing the conductor wires;



(b) passing an electrically conductive tubular member over the wire shield;

(c) inserting the conductors through first ferrules mounted directly on a planar disk;

(d) placing the wire shield around one end of the ferrules;

(e) affixing the tubular member over the wire shield on the ferrule whereby the wire shield is held in direct low-ohmic contact against the ferrule and said planar disk;

(f) affixing said conductor to the connector insert; and

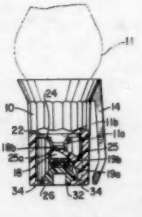
(g) placing said planar disk over the connector insert so that the planar disk is in low-ohmic and shielding contact with said body of the connector.

4,382,654

RESILIENT CONTACT SUPPORT FOR LAMP SOCKET

Henry Schick, Commack, N.Y., assignor to Gilbert Manufacturing Co., Inc., Long Island City, N.Y.

Filed Jan. 12, 1981, Ser. No. 224,191
Int. Cl.³ H01R *17/04*
U.S. Cl. 339—176 L **4 Claims**



1. A light bulb socket assembly comprising:

a body member having an opening in its top for insertion of a light bulb and an opening at its bottom to accommodate the passage through the body member of a pair of current carrying wires,

a pair of electrical contacts held within said body member

for contact between the current carrying wires and the light bulb, each said contact having a first portion for making contact with the current carrying portion of one of said pair of current carrying wires and a second portion for making contact with a current carrying portion of a light bulb, the second portion of at least one of said electrical contacts including an electrical tab projecting across the interior of the body member for engaging a base terminal of the light bulb; and

relatively resilient cantilevered support means projecting radially inward from a wall of said socket and disposed at a predetermined position below said tab for limiting downward displacement of said tab.

4,382,655

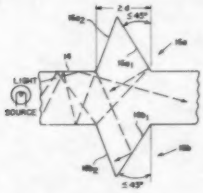
AT GRADE OPTICAL CROSSOVER FOR MONOLITHIC OPTIAL CIRCUITS

Robert S. Jamieson, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Apr. 7, 1980, Ser. No. 138,164

Int. Cl.³ G02B *5/174*

U.S. Cl. 350—96.12 **5 Claims**



1. In a monolithic optical circuit, a planar crossover of two light conductors comprised of straight sections of the two conductors intersecting at as close to 90° as can be conveniently provided for the crossover, wherein each conductor section has cross section dimensions greater than 0.89λ at which diffraction may begin to take place at the opening of one section into the volume of intersection, where λ is the wavelength of source light used in said monolithic optical circuit, and including a light trap in a straight section of a conductor just ahead of the crossover for trapping source light being reflected from sides of said conductor at large angles, wherein said trap is comprised of triangular shaped portions in said straight section on at least two opposing sides, each triangular portion having a far side receiving incident source light at an angle equal to or less than 45° so that the incident light will be reflected to the other side of the triangular portion, whereby what would be the third side of the triangular portion is a window for light at large angles of reflection in said straight portion of said conductor.

4,382,656

NON-IMAGING OPTICAL ENERGY TRANSFER SYSTEM

Anthony C. Gilby, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Nov. 12, 1980, Ser. No. 206,249

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.28 **20 Claims**

1. Apparatus for non-imaging energy transfer comprising:

an extended source of optical energy;

first and second sections spatially separated from one another between which said optical energy is to be transferred;

means within each of said sections for defining an extended beam focus and associated pupil thereby establishing an f/# requirement therein, said first section having a small f/# requirement and said second section having a higher f/# requirement;

a tapered light pipe positioned within the optical beam path between said sections with its small end positioned at the extended beam focus in said first section, with its large end positioned at the extended beam focus in said second section;

focusing means positioned intermediate said large end and said second section pupil;

said first section pupil being established at the vertex of said tapered light pipe by the combination of said focusing means and said light pipe such that the concentration of energy on said first section pupil is conjugate with symmetrically positioned points on said second section pupil and the product of the area of the extended beam focus and the solid angle of the beam respectively at each end of said light pipe is equal whereby energy is transferred between both of said pupils substantially without vignetting loss.

4,382,657

SEMI-FIXED ASTRONOMICAL MIRRORS AND ASPHERICAL GRATINGS AND METHODS FOR MANUFACTURING SAME BY ELASTIC FLEXION

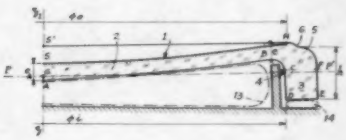
Gérard R. Lemaitre, Aix-en-Provence, France, assignor to A.N.-V.A.R., Paris, France

Filed Dec. 17, 1980, Ser. No. 217,440

Claims priority, application France, Dec. 20, 1979, 79 31632

Int. Cl.³ G02B *5/10, 7/18;* B29D *11/00;* C03B *23/035*

U.S. Cl. 350—295 **6 Claims**



1. An astronomical mirror which comprises a thin disc having a reflecting face which has been surfaced along a spherical or plane surface and polished, a cylindrical ring coaxial with said disc and a junction zone that connects the periphery of said disc to an axial end of said cylindrical ring, said cylindrical ring being located on the side of the disc opposite to said reflecting face; said mirror further including means hermetically applying said cylindrical ring to a rigid support with which said thin disc and said cylindrical ring define a cavity; and means for adjusting the pressure P_i in said cavity in relation to the external pressure P_e such that a differential pressure is established to deform said spherical or plane reflecting face into an aspherical surface; said junction zone being defined on its outer side by a rounded surface that connects the periphery of said reflecting face to the outer surface of said cylindrical ring and on its inner side by a fillet in the form of a quadrant surface that connects the periphery of the face of said thin disc

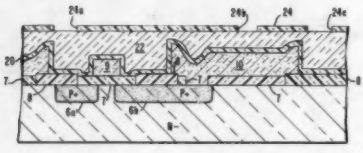
which is opposite to said reflecting face to the inner surface of said ring.

4,382,658

USE OF POLYSILICON FOR SMOOTHING OF LIQUID CRYSTAL MOS DISPLAYS

Steven E. Shields, San Diego, and Bruce G. Fletcher, Vista, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 24, 1980, Ser. No. 209,455
Int. Cl.³ G02F 1/135
U.S. Cl. 350—334 **10 Claims**



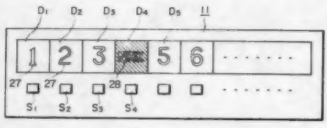
1. A liquid crystal display comprising:
a semiconductor integrated circuit formed on a semiconductor substrate and having a top surface;
a polycrystalline silicon layer formed over the top surface of said integrated circuit and divided into islands, said polycrystalline silicon layer having a top surface which is flatter than the top surface of said integrated circuit;
a plurality of reflective pixel control electrodes each formed over the top surface of an individual one of said polycrystalline silicon islands; and
a liquid crystal layer formed over said pixel control electrodes.

4,382,659

LIQUID CRYSTAL DISPLAY DEVICE

Shigeo Aoki, Habikino; Shuzo Isogami, Yao; Motomi Hosoda, Kashiwara; Yasuhiro Ukai, and Tatsuo Nagayoshi, both of Yao, all of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Dec. 12, 1980, Ser. No. 215,980
Claims priority, application Japan, Dec. 24, 1979, 54/168015
Int. Cl.³ B02F 1/137
U.S. Cl. 350—335 **9 Claims**



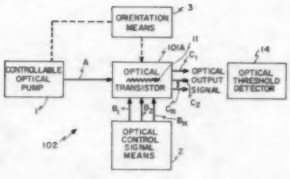
1. A liquid crystal display device comprising:
a plurality of display elements arrayed on a common plane, each of said display elements comprising a first color liquid crystal display cell of a guest-host type normally exhibiting a color which can be changed to a colorless transparent state by application of a voltage to said first cell, and a second color liquid crystal display cell superimposed on said first color liquid crystal display cell, said second color liquid crystal display cell being of a guest-host type which normally exhibits a color different from that of said first color liquid crystal display cell and which can be changed to a colorless transparent state by application of a voltage to said second cell, each of said first color liquid crystal display cells having first transparent electrodes respectively formed on both of the opposing inner surfaces thereof, at least the first transparent electrodes on the same sides of said first color liquid crystal display cells being formed in negative patterns, and each of said second color liquid crystal display cells having second transparent electrodes respectively formed on both of the opposing inner surfaces thereof;
a drive source for generating an alternating drive voltage;
a plurality of switches operative respectively to change over the application of said drive voltage to either said first or said second cell of a corresponding one of said display elements; and
drive circuit means connected to said switches, to said drive source, and to said first and second color liquid crystal display cells for applying said drive voltage from said drive source to one of said first and second cells of each of said display elements under the control of said switches.

4,382,660

OPTICAL TRANSISTORS AND LOGIC CIRCUITS EMBODYING THE SAME

George W. Pratt, Jr., Wayland, and Kantilal Jain, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 16, 1976, Ser. No. 689,418
Int. Cl.³ G02F 1/01
U.S. Cl. 350—353 **16 Claims**



1. An optical transistor comprising:
(a) a non-linear optical medium having a variable refractive index;
(b) means for introducing an optical pump signal along a defined axis into the medium;
(c) an optical collector port connected to the medium to receive as an input the optical pump signal;
(d) means for introducing at least one optical control signal into the medium;
(e) an optical base port connected to the medium to receive as an input said optical control signal; and
(f) an optical emitter port connected to the medium to emit from the medium an optical output signal of different frequency than the pump signal, the optical medium being characterized by its ability to generate a harmonic of the pump signal as an internal signal, the output signal being derived from the internal harmonic signal, and the control signal acting upon the medium to effect a change in the refractive index of at least a part of the medium and thereby modifying a phase relationship between the pump signal and the internal harmonic signal to vary the output signal.

4,382,661

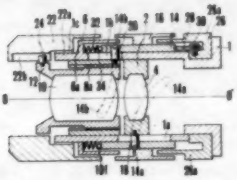
ZOOM LENS BARREL CAPABLE OF CLOSE UP PHOTOGRAPHY

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 134,798, Mar. 28, 1980, Pat. No. 4,286,845.
This application Aug. 6, 1980, Ser. No. 175,711
Claims priority, application Japan, Apr. 6, 1979, 54/42333
Int. Cl.³ G02B 7/10, 15/16
U.S. Cl. 350—430 **5 Claims**

1. A zoom lens barrel for use in zoom and close up photography, comprising:

(a) a generally cylindrical barrel part one end of which is arranged to be mounted to a camera body;
(b) optical means within said barrel part for performing zoom and close up photography, wherein said optical means has an optical axis which is parallel to the axis of said barrel part and said optical means is arranged for sliding movement relative to said barrel part in the direction of said optical axis;
(c) a generally cylindrical guide member coaxially rotatably mounted on said barrel part and including first guide slot means for engaging said optical means and second guide slot means for engaging said barrel part to axially move said guide member between first and second positions when said guide member is rotated, wherein said first



guide slot means axially moves said optical means relative to said barrel part so that said optical means zooms on an object to be photographed when said guide member is rotated over a certain range at said first position and said first guide slot means axially moves said optical means for close up photography of the object when said guide member is at said second position, said second guide slot means being arranged to maintain said guide member at said first position when said guide member is rotated over said certain range and to move said guide member to said second position when said guide member is rotated beyond said certain range; and
(d) an operation member secured to said guide member for moving said guide member to select a desired photographing operation.

4,382,662

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

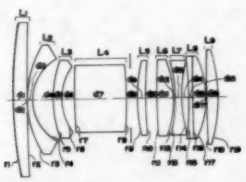
Hisashi Tokumaru, Osaka, and Akiyoshi Nakamura, Sakai, both of Japan, assignors to Minolta Camera Co., Ltd., Sakai, Japan

Filed May 19, 1980, Ser. No. 151,445

Claims priority, application Japan, Jun. 8, 1979, 54-72904; Jun. 11, 1979, 54-73779

Int. Cl.³ G02B 9/64, 13/04

U.S. Cl. 350—458 **25 Claims**



1. An inverted telephoto type wide angle lens system comprising:
an aperture stop;
a first group of lens elements defined between a front surface of the system and a surface adjacent to the aperture stop at the object side thereof; and
a second group of lens elements defined between a surface adjacent to the aperture stop at the image side thereof and a rear surface of the system, the second group including a biconvex lens element, at least one lens element located between the aperture stop and the biconvex lens element, and at least one lens element located at the image side of the biconvex lens element, wherein the biconvex lens element is axially movable relative to the other lens elements in association with the focusing, and the lens system fulfills the following conditions:

$$0.15f<X<0.4f$$

$$0.6f<f_b<2.0f$$

wherein:
X represents the maximum axial distance from the aperture stop to the object side surface of the biconvex lens element;
f_b represents a focal length of the biconvex lens element, and
f represents a focal length of the whole lens system.

4,382,663

DIAPROJECTOR

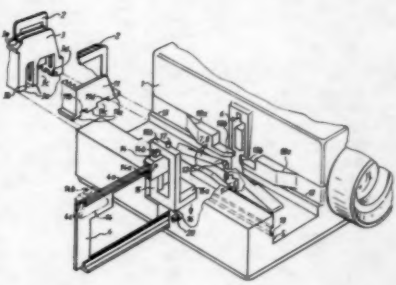
Karl Neudecker, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,409

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016757

Int. Cl.³ G03B 23/04

U.S. Cl. 353—104 **8 Claims**



1. A diaprojector for framed diapositives accommodated in at least two magazines differing from one another by different width of their diapositive compartments, comprising means forming at least two different tracks each for a respective one of two magazines with smaller and greater diapositive compartment widths, respectively; means for gradually transporting each of the two magazines by a distance corresponding to the width of the diapositive compartments; diapositive exchange means reciprocating substantially transversely of said tracks to exchange diapositives in the two magazines for demonstration thereof, said diapositive exchange means including a sliding element having a width smaller than the distance between one diapositive and the next one diapositive in a first magazine with a smaller diapositive compartment width so as to be capable of exchanging the diapositives in the first magazine, and a rider having a width which is greater than the width of said sliding element and is smaller than the distance between one diapositive and the next one diapositive in a second magazine with a greater diapositive compartment width so as to be capable of exchanging the diapositives in the second magazine, said rider being movable relative to said sliding element between a first position in which said sliding element is available for exchanging the diapositives in the first magazine and a second position in which alternately said rider is available for exchanging the diapositives in the second magazine; and means for sensing the presence of one of the magazines in a respective one of said tracks and blocking the opera-

tion of the diaprojector in response to sensing the fact that said rider is in a position which does not correspond to the one magazine in said one track.

4,382,664

MECHANISM FOR TRANSPORTING A SLIDE FROM A LONG MAGAZINE INTO THE OPTICAL CHANNEL OF A SLIDE PROJECTOR

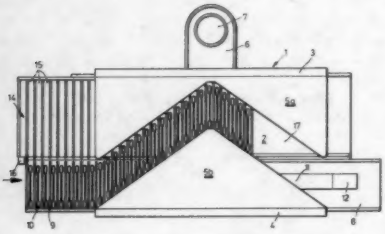
Leopold Karl, Wurzburg; Manfred Batz, Eibelstadt, and Herbert Wundling, Oschsenfurt, all of Fed. Rep. of Germany, assignors to Kindermann & Co. GmbH, Ochsenfurt, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,328

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034553

Int. Cl.³ G03B *23/04*

U.S. Cl. 353—111 **8 Claims**



1. A mechanism for transporting slides from a long magazine to an optical viewing area of a slide projector comprising:

support means adapted to be secured to the slide projector and having a channel for insertion of the long magazine therein and for permitting longitudinal movement of the long magazine therealong, and having a chute adapted to be in communication with the optical viewing area of the slide projector;

intermediate storage means having compartments adapted to accommodate the slides from the long magazine, said intermediate storage means being disposed adjacent and parallel to the long magazine when the long magazine is inserted in said channel on said support means;

means for advancing the long magazine when the long magazine is inserted within said channel in a stepwise manner in a longitudinal direction parallel to the length of the long magazine; and

means for sequentially guiding slides from the long magazine sideways to said compartments of said intermediate storage means and to a position above said chute, and for subsequently guiding slides sideways from said compartments of said intermediate storage means back to the long magazine.

4,382,665

AUTOMATIC FOCUSING DEVICE

Mitsuo Eguchi, Ageo; Yoshimi Kikuchi, Urawa, and Nobuyuki Ichino, Warabi, all of Japan, assignors to Mamiya Koki Kabushiki Kaisha, Japan

Filed May 27, 1981, Ser. No. 267,447

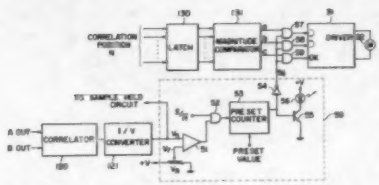
Claims priority, application Japan, Oct. 20, 1980, 55-145622

Int. Cl.³ G03B *3/10*; H04N *5/26*; G01J *1/44*

U.S. Cl. 354—25 **2 Claims**

1. In an automatic focusing device comprising: intensity distribution detecting means for detecting the intensity distribution of images of an object being photographed and formed by light rays passing through a photographing optical system of a photographic apparatus and for developing video signals corresponding to the intensity distribution; a signal processing circuit receptive of the video signals and having means for storing the video signals, means for subjecting the video signals to relative movement little by little and for determining the correlation of the signals, at each relative movement including means for developing a correlation output representative of said correlation;

means for detecting whether the photographing optical system is focused or not by detection of the peak position of said correlation output and including means for generating a drive direction signal in response to the peak position of said peak position is not representative of a focused condition of the photographing optical system, a lens in said photographing optical system, means driven by the



drive direction signal in a direction for focusing the photographing optical system as long as said drive direction signal is delivered, the improvement comprising:

a low contrast detecting circuit having counting means for counting how many times the correlation output is higher than a predetermined level in a detection operation of the focusing condition by said signal processing circuit and to provide a count value, means for rendering the drive direction signal ineffective when said count valve reaches a predetermined value, and warning means for presenting a warning display when said count value reaches said predetermined level.

4,382,666

INDICATING DEVICE FOR COMPUTER TYPE ELECTRONIC FLASH APPARATUS

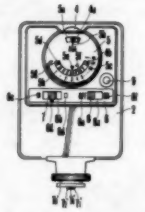
Shohei Ohtaki, Yokohama; Zenzo Nakamura, Urawa, and Naoki Nagase, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,286, Jan. 31, 1977, abandoned. This application Nov. 12, 1980, Ser. No. 206,084

Claims priority, application Japan, Feb. 5, 1976, 51-11727

Int. Cl.³ G03B *15/05*; G06C *3/00*; H05B *41/36*

U.S. Cl. 354—33 **7 Claims**



7. A computer type electronic flash apparatus, comprising:

(a) a light sensitive circuit having integrating capacitors to be charged by a current proportional to light reflected by the object to be photographed;

(b) an aperture selector movable between a first position and a second position for selecting a first aperture in the first position and a second aperture in the second position;

(c) a stationary disk having numerals arranged in numerical sequence corresponding to various object distances;

(d) a first linear indicating member provided on the stationary disk and extending a length corresponding to a first

distance range which depends on the first diaphragm aperture value selected when the aperture selector is moved to the first position;

(e) a second linear indicating member located on the stationary disk and extending a length corresponding to a second distance range which depends on the diaphragm aperture value selected when the aperture selector is moved to the second position;

(f) a switch associated with the aperture selector for adjusting the capacitance of capacitors in said light sensitive circuit in response to each of the positions selected by the aperture selector;

(g) control means connected to the light sensitive circuit for terminating a flash operation of the flash apparatus in response to the output signal from the light sensitive circuit;

(h) first means for forming a first window to permit passage of a light flash and a second window to permit passage of light to said light sensitive circuit and for holding said windows to face the object to be illuminated; and

(i) second means for holding said stationary disk, said first linear indicating member, said second linear indicating member, and said aperture selector so they face in a direction opposite said windows.

4,382,667

EXPOSURE COMPENSATION INFORMATION FORMING APPARATUS FOR A CAMERA

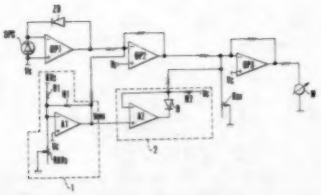
Masayoshi Kiuchi, Yokohama, and Masaharu Kawamura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 253,560, Mar. 13, 1981, abandoned. This application Apr. 20, 1982, Ser. No. 370,115

Claims priority, application Japan, Apr. 17, 1980, 55-51883

Int. Cl.³ G03B *7/085*

U.S. Cl. 354—43 **5 Claims**



1. An exposure compensation information forming apparatus for a camera comprising:

(a) a first circuit for producing an electrical output corresponding to a value AVo;

(b) a limiter circuit connected to the first circuit, said circuit forming an output corresponding to the output of the first circuit and limiting the output of the first circuit to a certain determined value so as to produce a signal corresponding to the determined value when the output of the first circuit becomes a predetermined relation to the determined value, whereby an output signal corresponding to AVc value information is produced as the output of the limiter circuit.

4,382,668

COMPACT CAMERAS USING A DISK TYPE FILM CARTRIDGE

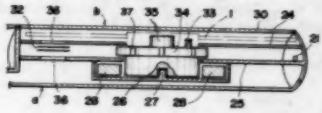
Nobuo Umehara, Suita; Maki Yamashita, Sakai, and Akira Yoshizaki, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,891, May 18, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,786

Claims priority, application Japan, May 21, 1980, 55-66548

Int. Cl.³ G03B *1/00*

U.S. Cl. 354—121 **10 Claims**



1. A camera for use with a disk type film cartridge incorporating a disk type film and a hub member rotatably supported by said cartridge and fixed to the film to rotate therewith, comprising:

a cartridge chamber section having a chamber for replaceably receiving said disk type film cartridge;

a stepping motor including a stator stationary relative to said cartridge chamber section and a rotor rotatable relative to the stator, said rotor including a coupling portion directly engagable with said hub member so as to directly rotate the hub member; and

a driving circuit for rotating said rotor a predetermined angle of rotation such that said film is advanced by one frame.

4,382,669

DISABLEMENT OF SHUTTER RELEASE IN PHOTOGRAPHIC CAMERA HAVING INTERCHANGEABLE OBJECTIVES

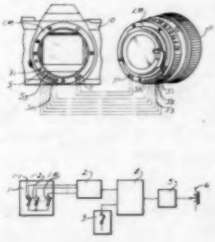
Eiichi Tano, Kamifukuoka, and Tetsuji Shono, Kawagoe, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 285,915

Claims priority, application Japan, Jul. 25, 1980, 55-105935[U]

Int. Cl.³ G03B *17/38*

U.S. Cl. 354—268 **5 Claims**



1. In a photographic camera of interchangeable lens type, the combination comprising:

a camera body;

an interchangeable objective;

means for removably mounting the objective on the camera body;

a plurality of switches each capable of assuming a first state or a second state, the switches all assuming the same state when the objective is removed from the camera body and the switches selectively assuming the first and second

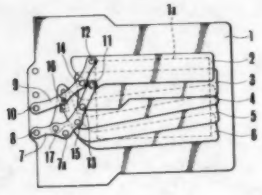
states according to the value of at least one lens characteristic when the objective is mounted on the camera body;
control means responsive to the selectively assumed states of the switches for automatically controlling light exposure;
shutter release means; and
means responsive to said same state of all the switches for disabling the shutter release means.

4,382,670

FOCAL PLANE SHUTTER BLADE ARRANGEMENT

Teiji Hashimoto, Kawasaki; Michio Senuma, Tokyo, and Fumio Shimada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Daitama, both of, Japan

Filed Jan. 25, 1982, Ser. No. 342,205
Claims priority, application Japan, Feb. 4, 1981, 56-14743[U]
Int. Cl.³ G03B *9/40*
U.S. Cl. 354—246 **1 Claim**



1. A focal plane shutter having two shutter blade groups consisting of at least five light shading thin plates opening and closing the shutter opening comprising:
a shutter base plate provided with an exposure opening;
two arms rotatably held respectively on two shafts on said base plate so as to drive said shutter;
said blade groups including a slit forming blade rotatably held at the ends of said two arms so as to be translated in parallel along with rotation of said arms, said slit forming blade having link points forming a parallelogram together with said two shafts on said base plate;
an auxiliary blade linked at a position adjacent to that of said slit forming blade so as to be translated in parallel along with rotation of said arms; and
a plurality of auxiliary blades respectively held on one shaft on one of said arms, with cam grooves provided therein being engaged on a common shaft on the other of said arms in such a manner that along with the rotation of said one arm they move around the former shaft while being moved together with said one arm.

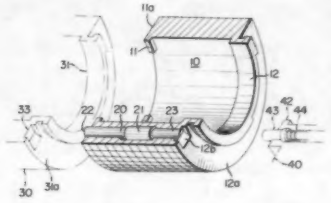
4,382,671

SIGNAL TRANSMISSION DEVICE IN AN INTERMEDIATE LENS BARREL

Kunihiro Fukino; Yukio Saito, and Yoshiharu Shiokama, all of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,518
Claims priority, application Japan, Oct. 30, 1980, 55-154139[U]
Int. Cl.³ G03B *17/14*
U.S. Cl. 354—286 **4 Claims**

1. In an intermediate lens barrel to be connected between an objective lens and a camera and provided with a device for transmitting an information signal given by signal means provided on said objective lens to detection means provided on said camera movably in the direction of the optical axis, said signal means being so formed as to represent the information signal as a certain determined amount of displacement in the direction of the optical axis and said intermediate lens barrel including a reference surface rotatable together with said signal transmission device relative to said camera in a determined rotational direction and also in the reverse rotational direction about the optical axis to connect the intermediate lens barrel with said camera and disconnect said barrel from said camera, an improvement in said transmission device comprising:
(a) movable means including a signal surface which shifts in the direction of the optical axis during the connection of said intermediate lens barrel to said objective lens depending on said determined displacement of said signal means



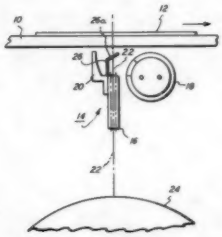
resulting from the connection between said movable means and signal means, and a first inclined surface contiguous to said signal surface and inclined in the direction of the optical axis for guiding said detection means to said signal surface with the rotation for connection; and
(b) a second inclined surface contiguous to said reference surface and disposed adjacent to said first inclined surface for guiding said detection means onto said reference surface with the rotation for disconnection.

4,382,672

ILLUMINATION ARRANGEMENT FOR ELIMINATION OF GRAY BORDERS IN COPYING DEVICE

Richard C. Boykin, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,559
Int. Cl.³ G03B *27/54, 27/70*
U.S. Cl. 355—1 **6 Claims**



1. An improved illumination and imaging system including an elongated lamp positioned adjacent a document support plane, said lamp adapted to provide an illumination band to a linearly extending incremental portion of the document to be copied,
a linear image transmitter having an entrance and exit face positioned between said document support plane and a photosensitive imaging plane and along an optical path so that light reflected from said linearly extending incrementally illuminated document portion enters the entrance face of said transmitter and is transmitted therethrough onto the photosensitive surface of said imaging plane,
means for moving said document with respect to said linear transmitter whereby an area of the imaging plane surface is exposed to form a latent image of said document, the

side edges of said exposed image being bounded by an unexposed area,

the improvement comprising a pair of reflective members connected, respectively to opposite ends of said linear image transmitter, and adapted to reflect a portion of said lamp illumination into the respective end portions of said entrance face,

whereby said reflected portions are transmitted onto the unexposed side edges of said exposed image so as to discharge said unexposed areas.

4,382,673

TRANSFER DEVICE

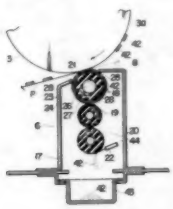
Shunichi Nakajima, Yokohama; Toshimasa Takano, Sagamihara, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1981, Ser. No. 245,977

Claims priority, application Japan, Mar. 25, 1980, 55/38051; Mar. 25, 1980, 55/38052; Mar. 26, 1980, 55/38653; Mar. 26, 1980, 55/38654

Int. Cl.³ G03G *15/00, 15/16, 13/00*

U.S. Cl. 355—3 TR **11 Claims**



1. In a transfer device for transferring a toner image formed on the surface of an image forming body to a copy medium, of the type comprising a rotatable transfer roller facing the image forming body and pressing the copying medium to the surface of the image forming body, the improvement comprising:

providing said transfer roller with elasticity to elastically press the copying medium to the surface of the image forming body thereby contacting with wider area, said transfer roller including a core provided with an outer circumferential surface and having a cylindrical rigid core bar and an elastic layer formed coaxially with said core bore on the outer circumferential surface thereof, an elastic and electrically conductive layer formed of an electrically conductive adhesive agent applied to said outer circumferential surface of said core, and a great number of electrically conductive furs electrostatically planted in said electrically conductive adhesive agent and projecting from the outer circumferential surface of said electrically conductive layer, said core bar having electrical conductivity and axially protruding from the end faces of said elastic layer, and said electrically conductive adhesive agent being a continuous layer applied to the outer circumferential surface of said core and part of said core bar; and

a bias power source connected to said core bar for charging said copying medium.

4,382,674

ELECTROSTATIC COPYING APPARATUS

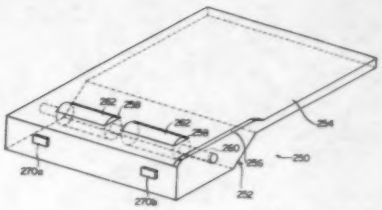
Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1981, Ser. No. 250,829

Claims priority, application Japan, Apr. 15, 1980, 55-49497

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CH **14 Claims**



1. In an electrostatic copying apparatus including a housing, a photosensitive member, an original-support mechanism including a transparent plate on which to place an original document to be copied, a charging corona-discharge device for applying corona discharge to the photosensitive member, an optical unit including an original-illuminating lamp for projecting the image of the original document onto the photosensitive member, and a copying paper transfer unit for transferring a copying paper through a predetermined transfer passage extending through a transfer zone; the improvement comprising detecting means for detecting the longitudinal size of the copying paper being transferred by the transfer unit, means for scanningly moving one of the original-support mechanism and at least a part of the optical unit toward the other to cause the image of the original document to be scanned and projected onto the photosensitive member, and control means for operating the charging corona-discharge device only for a period of time which corresponds to the detected longitudinal size of the copying paper said control means including actuation starting means for starting the actuation of the charging corona-discharge device simultaneously with, immediately before, or immediately after, the starting of the scanning movement of the one of the original-support mechanism and at least a part of the optical unit from a scanning movement starting position, and actuation stopping means which when the one of the original-support mechanism and at least a part of the optical unit has made a scanning movement from the scanning movement-starting position by a distance substantially corresponding to the longitudinal size of the copying paper detected by the copying paper size detecting means, stops the actuation of the charging corona-discharge device.

4,382,675

APPARATUS FOR PRODUCING MICROFORM RECORDS FROM MULTIPLE DATA SOURCES

Gerald F. Marshall, Grosse Pointe Woods, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

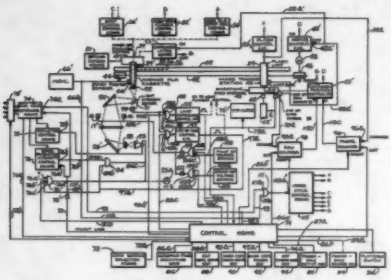
Filed Jan. 23, 1981, Ser. No. 227,958

Int. Cl.³ G03B *27/52, 27/70, 27/54*

U.S. Cl. 355—70 **12 Claims**

1. In an apparatus for producing records from light reflecting hard copy wherein a light image reflected from the hard copy is reduced to micro-image size and applied at a film imaging station to film means which is photosensitive to an image by the light reflecting from hard copy, said apparatus including a hard copy-supporting station including an opaque, hard copy-supporting platform supportable in a hard copy-receiving and imaging position where it supports hard copy facing upwardly in a given document plane, lighting means mounted above said platform which lighting means is to be

energized when a record of a piece of hard copy placed on said platform is to be made, and image-receiving and projecting means for receiving hard copy reflected light from a piece of hard copy placed on said platform and for providing an image thereof directed upon said film means, the improvement wherein said platform is mounted for movement between an operative substantially horizontal position at said supporting station and a position removed therefrom, a light projection area therebeneath, and image-containing light field producing means for projecting a light field upwardly through said area



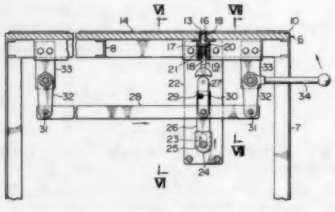
into said image-receiving means, said light field producing means comprising a display device spaced from said area and having an illuminateable screen which produces light image-forming areas in response to image producing signals fed to input terminals thereof, display device screen image directing means for directing the image on said display device screen into said area and focussing the same in said document plane, a source of data signals, and means for feeding said data signals to said display device input terminals to form on said screen an image to be projected by said image directing means.

4,382,676

POSITIONING MACHINE OF ORIGINAL FILMS ON A BASE SHEET

Koichiro Ohta, Chofu, and Makoto Kitai, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 12, 1981, Ser. No. 243,121
Claims priority, application Japan, Mar. 21, 1980, 55-35886
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **7 Claims**



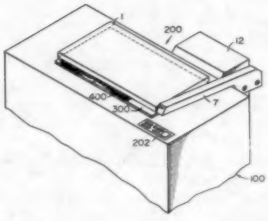
1. A positioning machine of original films on a base sheet, comprising:
(a) a base plate;
(b) a base sheet to be placed on the base plate;
(c) a pair of first register pins for positioning the base sheet, which are provided to the base plate; and
(d) pairs of second register pins for positioning original films to be mounted onto the base sheet, whose tops are positioned under the upper surface of the base plate and are adapted to be projected beyond the same, each original film having a pair of second register pin holes to be filled by each pair of second register pins, the base sheet having first register pin holes to be filled by the first register pins and the corresponding number of second register pin holes to that thereof, which are positioned in the corresponding positions to the second register pins and are to be fitted thereby.

4,382,677

ORIGINAL DOCUMENT PRESSER

Masaharu Tsukata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 228,725, Jan. 27, 1981, abandoned. This application Mar. 17, 1982, Ser. No. 359,033
Claims priority, application Japan, Jan. 31, 1980, 55-12940; Jan. 31, 1980, 55-12941
Int. Cl.³ G03B *27/62, 27/64*
U.S. Cl. 355—76 **16 Claims**



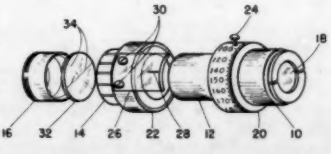
1. An original document pressing apparatus comprising:
a pressing member for pressing an original document on an original document carriage;
driving means for opening and closing said pressing member;
detection means for detecting when said pressing member is in a predetermined position; and
control means including a first signal generating circuit and a second signal generating circuit to make said driving means operate to close said pressing member in response to an output signal from said first signal generating circuit at the start of an image forming operation and to make said driving means operate to open said pressing member in response to an output signal from said second signal generating circuit at the end of an image forming operation while controlling also the operation of said driving means at the start of the image forming operation by means of an output from said detection means.

4,382,678

MEASURING OF FEATURE FOR PHOTO INTERPRETATION

Henry A. Thompson, Manassas; Clifford Kottman, Springfield, both of Va.; Walter H. Mueller, New Carrollton, and Robert E. Phebus, Clarksburg, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1981, Ser. No. 278,263
Int. Cl.³ G01C *21/06;* G01B *11/02, 5/24*
U.S. Cl. 356—150 **10 Claims**



1. A method for determining the actual dimensions and orientation of a feature directly from oblique panoramic aerial photography using an eyepiece having a reticle divided into a

scale having small increments, the eyepiece including indicia located on the exterior of the eyepiece which indicia is adjustably secured relative to the eyepiece and divided into increments of a circle and a reference mark secured adjacent the indicia, comprising the steps of:

viewing the photography through the magnifying eyepiece;

adjusting the indicia and reference mark to align with one of the photograph axes and securing the indicia to the eyepiece;

scanning the photograph to locate the feature to be measured;

measuring the height, width, and length of the feature using the scale of the reticle;

measuring the orientation of the feature by aligning the scale along the longest axis of the feature and reading the indicia adjacent the reference mark; and

calculating the actual height, width, length and orientation of the feature using the measurements obtained along with the camera and photograph parameters.

4,382,679

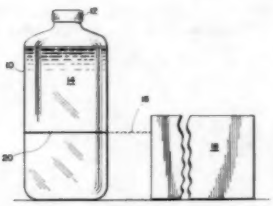
DYE LEAK DETECTION METHOD

Charles E. Lee, Castro Valley, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Oct. 6, 1980, Ser. No. 193,987

Int. Cl.³ G01N *21/90*

U.S. Cl. 356—237 **9 Claims**



1. A method for detection of leaks in a closed container having substantially transparent walls and filled with a substantially transparent liquid comprising:

(a) immersing the container in a solution of a fluoresecent dye for a time sufficient for penetration of the dye through any leaks in the container into the liquid,

(b) providing a path of a laser light beam, the wavelength of the beam being selected to induce substantially maximum fluorescence of the dye,

(c) placing said container in said path of said light beam so that said light beam passes through said container without substantial scattering; and

(d) visually observing within the container the presence or absence of a fluorescent light beam produced by excitation of said dye by said laser light.

4,382,680

APPARATUS AND PROCESS FOR SWEEPING A FLAT OPTICAL LIGHT PLANE

Martin R. Hamar, 70 Lindeu Tree Rd., Wilton, Conn. 06897

Continuation-in-part of Ser. No. 78,933, Sep. 26, 1979, Pat. No. 4,297,031. This application Oct. 22, 1981, Ser. No. 313,965

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

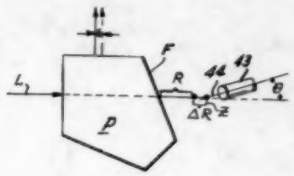
Int. Cl.³ G07B *11/26*; G02B *7/18*

U.S. Cl. 356—247 **6 Claims**

1. A process for sweeping a substantially flat optical light plane perpendicular to a primary input laser beam emanating from a laser device and having a displacement error within a predetermined tolerance, comprising:

(a) mounting a solid penta prism having an entrance face and first and second reflecting surfaces on a spindle having an axis of rotation intersecting the laser beam axis at a point Z and at a non-zero angle θ such that said laser beam intersects said entrance face and said first reflecting surface of said penta prism is located a distance $R+\Delta R$ from point Z along said laser beam axis, R representing the optimum distance between said penta prism and said point Z and given by:

$$R=D[1.707-3.414(1-(1/N'))],$$



where D is the distance that said laser beam traverses within said penta prism between said first and second reflecting surfaces and N' is the index of refraction of said penta prism, ΔR representing an error distance inducing a displacement error ϵ in said optical light plane given by:

$$\epsilon=\Delta R \sin \theta;$$

(b) adjusting at least one of ΔR and θ such that said displacement error ϵ is within said predetermined tolerance; and

(c) rotating said penta prism about said axis of rotation to produce said light plane.

4,382,681

MEASUREMENT OF ROTATION RATE USING SAGNAC EFFECT

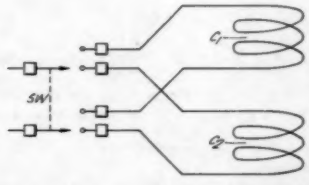
Martin Chown, Harlow, and Jeffrey G. Farrington, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,249

Claims priority, application United Kingdom, Jan. 17, 1980, 8001513

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **5 Claims**



1. An optical fibre coil Sagnac effect rotation rate measuring instrument which has either a matched pair of optical fibre Sagnac coils, each consisting of a plurality of turns of single mode fibre, arranged to have a common axial direction, wherein the instrument is provided with two optical ports for connection with said pair of coils and is connected thereto via a commutating switch, operation of which changes the interconnection of the ports from one coil to the other in such a way that light previously launched into the one coil to propagate in either one of the two rotational senses is now launched to propagate in the opposite rotational sense in the other coil.

4,382,682

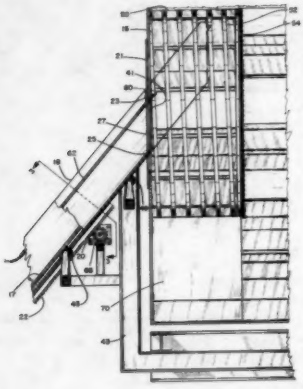
RECYCLING APPARATUS FOR PARTICULATE ASPHALTIC CONCRETE

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 155,502, Jun. 2, 1980, Pat. No. 4,265,546, and a continuation-in-part of Ser. No. 139,640, Apr. 14, 1980, Pat. No. 4,326,809, and a continuation-in-part of Ser. No. 1,051, Jan. 28, 1979, Pat. No. 4,219,278, each is a continuation-in-part of Ser. No. 906,734, May 17, 1978, Pat. No. 4,240,754, and a continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131. This application Aug. 22, 1980, Ser. No. 180,297

Int. Cl.³ B01F *15/02, 15/06;* B28C *5/46*

U.S. Cl. 366—25 **9 Claims**



1. In a rotatable drum for gradually heating particular composition between an input and output end, and having a port at said output end for recovering heated composition therefrom, the improvement comprising:

a retractable chute extendable into said drum at said port,

temperature sensing means secured in the interior of said drum adjacent said port for sensing the temperature of composition thereat, and

means for selectively extending and retracting said chute into said drum in response to composition temperature sensed by said temperature sensing means, whereby composition having a selected temperature may be recovered.

4,382,683

MIXING MACHINES

Thomas J. Teagle, Blackwater, Truro, Cornwall, TR4 8HQ, England

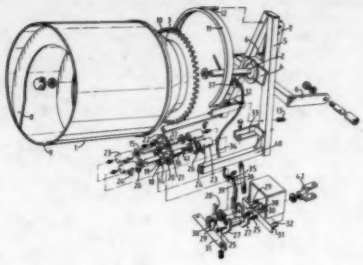
Filed Sep. 24, 1980, Ser. No. 190,334

Claims priority, application United Kingdom, Sep. 24, 1979, 7933043

Int. Cl.³ B28C *7/16*

U.S. Cl. 366—44 **11 Claims**

1. A rotary drum mixing machine of the kind in which the drive to the drum includes driven means secured to the drum and operatively connected to driving means on a prime-mover driven shaft, said machine comprising drive transmission means which permit reversal of the direction of rotation of the drum without having to reverse the prime mover, said drive transmission means being interposed between the driving means and the prime-mover driven shaft and including two gear wheels mounted for continuous meshing engagement with one another on parallel shafts, one of said shafts being operatively connected to the prime mover driven shaft for continuous rotation of said gear wheels in opposite directions about the shaft axes, both of said shafts being rotatably mounted in a cradle which is pivotable about an axis parallel with the axes of rotation of said gear wheels, said cradle being adapted to selectively move each gear wheel into and out of a



position in which its rotation is transmitted through said driving means and said driven means to rotate said drum in one or the other direction.

4,382,684

APPARATUS FOR MIXING AND DISPENSING LIQUID RESINS

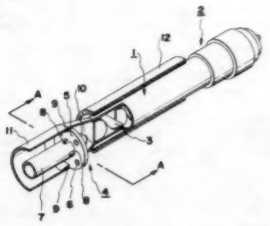
Nobuo Hori, Kawaguchi, Japan, assignor to Sanjo Seiki Co., Ltd., Kawaguchi, Japan

Filed Feb. 27, 1981, Ser. No. 239,106

Claims priority, application Japan, Mar. 6, 1980, 55-028672; Mar. 22, 1980, 55-036628

Int. Cl.³ B01F *5/00, 5/06*

U.S. Cl. 366—178 **6 Claims**



1. An apparatus for mixing and dispensing liquid resins, comprising:

(a) a stationary mixer housed in a mixing unit; and

(b) a dispersing unit, including means for providing delayed mixing of a first liquid resin and a second liquid resin having a viscosity greater than the viscosity of the first liquid resin, respectively flowing in a first axial direction, and for diverting flow of the first liquid resin radially and angularly with respect to the direction of flow of the second liquid resin, said means including:

(1) a first dispersing plate crossing a line of flow upstream of said stationary mixer, having an upstream facing surface, said upstream facing surface having:

(A) a perforationless portion having a first outer boundary,

(B) a second outer boundary surrounding said first outer boundary in spaced relation thereto, and

(C) at least one first perforation provided between said first and second boundaries for allowing passage of said first and second liquid resins to be mixed downstream thereof,

(2) a first tube having:

(A) an end fixed in abutment to said upstream facing surface along said first outer boundary so as to sur-

round said perforationless portion of said upstream facing surface, and

(B) at least one second perforation upstream of said first dispersing plate at said end thereof, spaced from said at least one first perforation circumferentially along the outer periphery of said first tube, for allowing passage of said first liquid resin, and

(3) a second tube surrounding said at least one first perforation along said second outer boundary, provided upstream of said first dispersing plate, and enclosing said first tube, for allowing passage of said second liquid resin;

whereby said first liquid resin is directed by said first dispersing plate and said first tube through said at least one second perforation radially and angularly with respect to the direction of flow of the second liquid resin and is delayed thereby in its downstream movement before passing through said at least one first perforation together with said second liquid resin.

4,382,685

METHOD AND APPARATUS FOR STIRRING PARTICLES IN SUSPENSION SUCH AS MICROCARRIERS FOR ANCHORAGE-DEPENDENT LIVING CELLS IN A LIQUID CULTURE MEDIUM

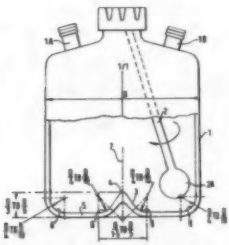
James M. Pearson, Great Shelford, England, assignor to Techne (Cambridge) Limited, Cambridge, England

Continuation-in-part of Ser. No. 169,316, Jul. 16, 1980, abandoned. This application Jun. 25, 1981, Ser. No. 277,403

Claims priority, application United Kingdom, Jul. 17, 1979, 7924810; European Pat. Off., Jan. 12, 1981, 81300116.1; May 6, 1981, 81301996.5

Int. Cl.³ B01F *3/08*

U.S. Cl. 366—241 **34 Claims**



1. Apparatus for stirring micro-carriers in a liquid culture medium to allow living cells to grow thereon, comprising:

(a) a cylindrical vessel having a bottom and side walls extending upwardly therefrom,

(b) means for imparting to liquid culture medium in said vessel a primary generally horizontal circulatory movement about the axis of said vessel and a secondary, generally vertical circulatory movement comprising stirrer means mounted to extend into the vessel with an end adjacent to and spaced from the bottom of the vessel, and moved in an orbital path in said vessel generally concentric with said walls, and

(c) means for causing substantially all of the liquid culture medium in the vessel to be moved by said stirrer means comprising an upstanding portion extending upwardly from the vessel bottom and spaced from said side walls thereby forming a trough in the bottom portion of said vessel.

4,382,686

QUARTZ WATCH WITH ANALOGICAL TIME DISPLAY, COMPRISING A MANUALLY CONTROLLED TIME ALTERING DEVICE

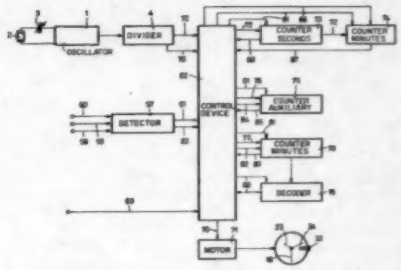
Urs Giger, Solothurn, and Norberto Perucchi, St. Blaise, both of Switzerland, assignors to ETA A.G. Ebauches Fabrik, Solothurn, Switzerland

Continuation of Ser. No. 972,499, Dec. 22, 1978, abandoned. This application Nov. 28, 1980, Ser. No. 211,447

Claims priority, application Switzerland, Dec. 31, 1977, 16377/77

Int. Cl.³ J04 *79/00*

U.S. Cl. 368—187 **8 Claims**



1. In an electronic watch with a manually operable displayed time altering device, a quartz oscillator providing a time signal, a frequency divider connected to said oscillator and providing a first string of pulses having a predetermined frequency and a predetermined sign, a bi-directional stepping motor normally rotatively driven by said first string of pulses in a sense corresponding to the sign of said first string of pulses, a gear train driven by said motor and a time display device comprising hands,

the improvement wherein said hands are permanently coupled together through said gear train and said displayed time altering device comprises:

a control member displaceable from an inactive rest position to an active position, said control member being mechanically coupled to drive said gear train and associated hands when in said active position,

switch means operatively associated with said control member and placed in a first operative condition when said control member is in said inactive position and in a second operative condition when said control member is in said active position, said switch means, when in said first operative condition, allowing said first string of pulses to be supplied to said motor and, when in said second operative condition, interrupting the supply of said first string of pulses to said motor; and,

a recording means comprising

a detector coupled to said gear train and providing a second string of pulses when said gear train is driven by said control member, the number and sign of said second string of pulses corresponding to the amount and sense of displacement of said hands, said detector being activated by said switch means being in said second operative condition, and

counter means receiving said first string and pulses when said switch means is in said second operative position and having a predetermined counting capacity corresponding to the smallest time alteration to be effected, said counter means being activated by said switch means being in said second operative position to count said second string of pulses in accordance with the sign thereof and to algebraically add said first string of pulses from said divider to said counted second string of pulses, said counter means being responsive to said

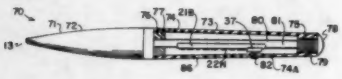
switch means moving from its second operative condition to its first operative condition to quickly feed a number of pulses to said motor corresponding to the sign and number of pulses resulting from said algebraic addition to thereby move said gear train and associated hands to a corrected time position.

4,382,687

ELECTRONIC DIGITAL WATCH

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 643,327, Dec. 22, 1975, abandoned.
This application Dec. 22, 1977, Ser. No. 863,256
Int. Cl.³ G04B *37/12*
U.S. Cl. 368—278 **3 Claims**



1. An electrically operated time indicating appliance comprising in combination with an assembly including an elongated tubular barrel defining a housing for said appliance, a first opening in the side wall of said barrel and a transparent window means extending across and sealing said first opening,

a writing implement secured to said assembly and protruding from an end thereof,

a second opening to said barrel providing longitudinal access to the interior of said barrel, closure means, and means for removably securing said closure means across said second opening,

an elongated electrical circuit board having electrical circuit means operable for computing and generating time defining electrical signals and display means secured to a major surface of said circuit board and connected to said electrical circuit means for variably generating a visual indication of time in accordance with the signals generated by the electrical circuit means of said circuit board,

said elongated electrical circuit board being narrower than said second opening to permit said circuit board to be endwise inserted into said second opening and to be moved longitudinally through said barrel,

means for slidably supporting said elongated circuit board within said barrel aligned with said transparent window means to permit said display means to be viewed from the exterior of said housing through said first opening and to permit the removal of said circuit board through said second opening when said closure means is removed, and

an electric battery and means for electrically connecting said battery to said electrical circuit means including means for receiving said battery and means for compressing said battery against said connecting means when said barrel, said receiving means and said circuit board are operatively assembled.

4,382,688

TIMED MEDICATION DISPENSER

Roy J. Machamer, 615 Harbin La., Reno, Nev. 89509

Filed Jan. 26, 1981, Ser. No. 228,146
Int. Cl.³ G04B *47/00*; G04C *21/16*; G08B *5/00*
U.S. Cl. 368—10 **8 Claims**

1. A medication dispenser, comprising:

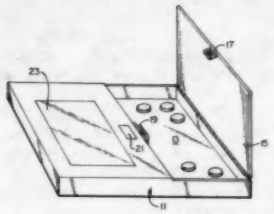
a hand-held, portable case having a medication compartment therein with a lid that is normally held closed by a manually operable latch, whereby the lid is opened to access the medicine compartment by operating the latch by hand,

a switch mounted adjacent said latch to detect when the lid has been opened,

an electronic watch module mounted within said case, said module including an alarm that provides an indication at least once each day at a preset time in response to a signal along a path from controlling electronics of said module,

electronic memory means connected in said signal path for disarming said alarm in accordance with a preset pattern, thereby to provide an alarm indication only upon selected ones of said alarm preset times, and

means connecting said switch into the watch module alarm



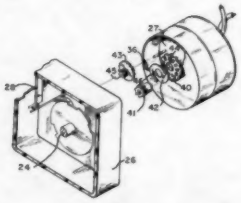
signal path for terminating the alarm indication once initiated, whereby the alarm is terminated upon the medication compartment lid being opened to remove medication therefrom, thereby to thereafter indicate that the medication has been taken.

4,382,689

CLUTCH FOR A TIMING MECHANISM

Elmo W. Voland, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 9,125, Feb. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,701, Aug. 11, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,608
Int. Cl.³ G04B *19/00*; G04F *1/00*
U.S. Cl. 368—76 **2 Claims**



1. In a timing mechanism wherein a cam means is independently rotated by two separate motor drive means in a predetermined direction and wherein at least one of said motor drive means is connected to said cam means by a gear train, the improvement characterized by a clutch means permitting rotation of said cam means by one of said motor drive means independent of the other, comprising:

(a) a hub rotatably carried on a shaft,

(b) a gear of said gear train rotatably carried by said hub,

(c) a plurality of slots disposed about a periphery of a face of said gear,

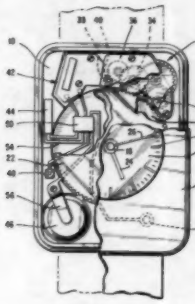
(d) a leaf spring fixedly carried on said hub, said leaf spring including at least two diametrically opposed fingers pointed in said predetermined direction, and

(e) a bent-over portion extending from a distal end of said fingers in the same direction toward which said fingers are pointing so as to engage said slots and drive said gear in said predetermined direction.

4,382,690
ULTRA-FLAT ELECTRONIC WATCH

Raoul H. Erard, La Chaux-de-Fonds, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Sep. 6, 1979, Ser. No. 73,553
Int. Cl.³ G04B *19/20*
U.S. Cl. 368—77 **10 Claims**



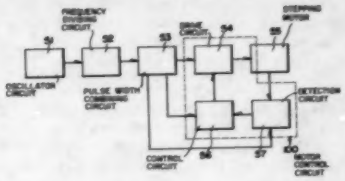
1. An electronic watch comprising:
a casing having a planar front plate including a transparent window in one portion thereof, said window being provided with a lower face directed towards the interior of the casing, a back plate substantially parallel to said front plate; and having within said casing;
time display means visible beneath said transparent window and comprising two pivotally mounted coaxial discs having external teeth arranged around the periphery of said discs and provided with index marks acting as an hour hand and a minute hand respectively;
a driving unit including a motor and a gear train driven by said motor and comprising a plurality of gears meshing with said external teeth of said discs, a quartz crystal resonator and an integrated circuit for controlling said motor; and a power cell for feeding said motor, said quartz crystal resonator and said integrated circuit;
said power cell, said resonator and said driving unit being mounted on said back plate at least partially at the same level as said display means without substantially overlapping one another and said discs when viewed in a direction perpendicular to said front plate of the watch, and the upper portion of at least one of said motor, gear, quartz crystal resonator or power cell being at least at the same level as the lower face of said window.

4,382,691
ELECTRONIC WATCH

Masaharu Shida; Akira Torisawa; Jun Ueda; Masaaki Mandai, and Katsuhiko Sato, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Continuation of Ser. No. 886,542, Mar. 14, 1978, abandoned. This application Jul. 16, 1980, Ser. No. 169,312
Claims priority, application Japan, Mar. 16, 1977, 52-28977
The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.
Int. Cl.³ G06F *1/04*; G04C *3/00*
U.S. Cl. 368—157 **14 Claims**

1. In an analog electronic timepiece of the type having a stepping motor comprised of a stator, a drive coil wound on the stator, and a rotor rotationally driven in response to pulses applied to the drive coil: an oscillator circuit for generating high frequency signals suitable as a time standard; a frequency dividing circuit receptive of the high frequency signals for frequency-dividing the same into lower frequency time signals; a pulse combining circuit receptive of the lower frequency time signals for combining the same to produce normal drive pulses and correcting drive pulses having a greater effective power than the normal drive pulses for applying the same to the motor drive coil for driving said stepping motor; detecting circuit means operative after each normal drive pulse is applied to the motor drive coil and at a time non-coincident with the application of each normal drive pulse for detecting a non-

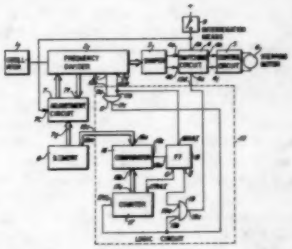


rotated condition of the motor rotor; and means controlled by said detecting circuit means for applying a correcting drive pulse to the motor drive coil before the next normal drive pulse is applied thereto in response to detection of a non-rotated condition of the motor rotor by said detecting circuit means.

4,382,692
ANALOG-DISPLAY ELECTRONIC TIMEPIECE COMPRISING A DIVIDER WITH AN ADJUSTABLE DIVISION FACTOR

Fridolin Wiget, and Rene Besson, both of Neuchatel, Switzerland, assignors to Ebauches, S.A., Switzerland

Continuation of Ser. No. 97,532, Nov. 26, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,491
Int. Cl.³ G04F *5/00*; G04B *17/12*
U.S. Cl. 368—157 **2 Claims**



1. An electronic timepiece comprising:
an oscillator for delivering a high frequency signal;
a dividing means having a plurality of dividing stages; each state delivering a low frequency signal;
an adjustment memory for storing a division factor;
a time display means;
a motor provided with a coil and a rotor for driving said display means;
means for applying pulses to said coil in response to control pulses;
manually operable means for delivering an interrogation signal when said manually operable means are actuated;
an adjustment circuit responsive to the absence of said interrogation signal for adjusting the division factor of at least one of said dividing stages in accordance with the memory division factor for said dividing means to deliver an adjusted low frequency signal;
means for producing a measuring signal in response to two frequency signals delivered by two different dividing stages representative of said high frequency signal and said memory division factor, said measuring signal consisting of pulses all having the same duration; and
switching means controlled by said manually operable

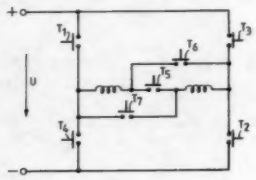
means for delivering said control pulses in reply to said adjusted low frequency signal when said interrogation signal is absent and to said measuring signal when said interrogation signal is present, the duration of said measuring pulses being too short for said pulse applying means to apply pulses to said coil capable of rotating said rotor, but long enough for said pulse applying means to apply pulses to said coil to produce a wave which can be detected by apparatus exterior to said timepiece.

4,382,693

SINGLE PHASE BIPOLAR STEPPING MOTOR HAVING TWO ROTATION SENSES

Mai Tu Xuan, Chavannes, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Sep. 23, 1980, Ser. No. 189,875
Claims priority, application France, Sep. 25, 1979, 79 24359
Int. Cl.³ G04F 5/00; G05B 19/40
U.S. Cl. 368—160 **12 Claims**



1. A timepiece motor assembly including:

a single-phase bipolar electromagnetic stepping motor including a rotor formed of a magnet having at least one pair of poles and a stator formed of a soft ferromagnetic material extending between said poles and two windings wrapped thereabout, said rotor being capable of rotation in both senses;

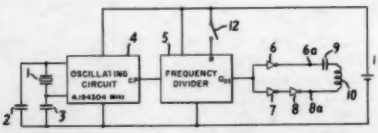
a signal-feeding means coupled to said two windings for energizing said two windings with first and second types of electrical pulses for respectively causing rotation of said rotor in opposite senses, said signal-feeding means including switching means for interconnecting said windings in series one with the other to receive said first type of electrical pulses and thereby rotate said rotor in a first sense and for interconnecting said windings in parallel one with the other to receive said second type of electrical pulses and thereby rotate said rotor in an opposite sense.

4,382,694

TIMEPIECE CIRCUIT FOR COMPENSATING TIME LAG JOINED WITH RESET RELEASING

Kiyoshi Kitai, and Takeo Saito, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 813,767, Jul. 7, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,173
Claims priority, application Japan, Jul. 9, 1976, 51-81781
Int. Cl.³ G04C 9/00
U.S. Cl. 368—187 **2 Claims**



1. In a step-second timepiece: oscillating means for producing a high frequency signal suitable as a time standard; resettable multi-stage frequency-dividing means connected to said oscillating means to receive therefrom the high frequency signal for frequency dividing the high frequency signal into a low frequency time signal comprised of a succession of low frequency pulses, said resettable multi-stage frequency-dividing means comprising a series of frequency-dividing stages connected in cascade such that the output signals of successive stages are in phase except for the output signals of at least the last three stages which are of opposite phase; motor driving means connected to the last one of the frequency-dividing stages to receive therefrom the low frequency signal for applying the low frequency pulses as drive pulses to a motor; and means including a manually actuatable reset switch for setting time and connected to said resettable multi-stage frequency-dividing means for resetting said frequency-dividing means such that the time interval from when said reset switch is released up to when the first low frequency pulse is output by said frequency-dividing means is shorter than the pulse interval of the successive low frequency pulses produced by said frequency-dividing means thereby effectively compensating for the time lag inherently associated with the release of said reset switch.

4,382,695

THIN MOVEMENT FOR STEPPING MOTOR WATCH

Joseph Rinaldi, and Paul Wuthrich, both of Watertown, Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Jun. 19, 1981, Ser. No. 275,469
Int. Cl.³ G04B 19/02, 29/00
U.S. Cl. 368—220 **7 Claims**

1. An improved movement for a thin timepiece of the type having a stepping motor with a rotor driving timepiece hands through an intermediate gear train, the improvement comprising:

(a) a frame member comprising a sheet metal stamping having a peripheral front frame portion connected to and at least partially surrounding a back frame portion, said front and back frame portions having surfaces disposed in parallel spaced planes,

(b) a plurality of non-rotatable pins each having one end fixed in the frame back portion and the other end terminating substantially at the front frame surface plane,

(c) a plurality of gear members rotatably mounted on said pins, said gear members comprising an intermediate gear and pinion assembly driven by said rotor, and a third wheel gear and pinion assembly driven by said intermediate assembly, and

(d) a dial for the timepiece supported on the front frame

surface portion and contacting the terminating ends of said pins and controlling the axial movements of said rotatable gear members on said pins.

4,382,696

ELECTRO-OPTICAL ANALOG TIME DISPLAY DEVICE

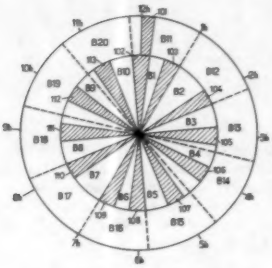
Niraj Kumar, Indialantic, Fla., and John Varney, Hayes, England, assignors to Ebauches Electroniques, S.A., Switzerland

Filed Feb. 18, 1981, Ser. No. 235,540

Claims priority, application Switzerland, Feb. 18, 1980, 1290/80

Int. Cl.³ G04C *17/02*

U.S. Cl. 368—240 **10 Claims**



1. An electro-optical analog time display device for displaying an hour hand on a 12 hour dial comprising a layer of electro-optical material having on one face a ring of ten sectorial plate electrodes each subtending an angle of 36° and on the other face 10 N radial segments electrodes, where N is an integer greater than 1, 10 groups of N segments being opposed to the 10 plates respectively and the segments being so connected in N meandering circuits M1 to MN that, in proceeding one way round the dial, the segments of the said groups pertain to the circuits M1 to MN and then the circuits MN to M1 and so on in alternation round the dial, the plate electrodes being asymetrical relative to the 12 o'clock axis of the dial so that a boundary between two adjacent plates is angularly offset from the said axis by a whole number of the segments.

4,382,697

ELECTRONIC TIMEPIECE

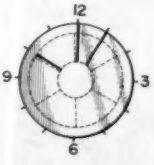
Masanori Fujita, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Continuation of Ser. No. 124,950, Feb. 26, 1980, abandoned. This application May 7, 1982, Ser. No. 375,989

Claims priority, application Japan, Feb. 27, 1979, 54-22334

Int. Cl.³ G04C *17/02*

U.S. Cl. 368—240 **2 Claims**



1. An electronic timepiece in which display elements in the shape of second, minute and hour hands are enabled to display at the same time, comprising:

an optical display device having a number of separate display elements in the shape of hands and including electrodes comprised of a number of segment electrodes in the shape of hands arranged extending radially from a point, and common electrodes formed in at least two concentric rings and divided into sectorlike electrodes each of which opposes a group of an equal number of the segment electrodes, means comprised of circuit paths for connecting a corresponding segment electrode in each of the groups without crossing one another, and optical display material between the segment electrodes and the common electrodes;

time counting means receptive of clock pulses for generating a time-count-output representing at least seconds, minutes and hours;

a timing pulse generator for generating timing pulses;

a selection circuit receptive of timing pulses for generating time-divisionally each time unit of the time-count-output in synchronization with the timing pulses;

first means for decoding one place of each time unit of the time-count-output generated by the selection circuit to logical values for selecting a set of connected corresponding segment electrodes;

second means for decoding a second place of each time unit of the time-count-output generated by the selection circuit to logical values for selecting a sector-like electrode;

converting means for changing the order of the output from the first means in accordance with whether the number of the second place-output selected by the selection circuit is an even number or odd number;

a segment voltage supply circuit for applying selectively the voltages 0, V_0, $2V_0$ and $3V_0$ to the respective segment electrodes in accordance with the output from the second means; and

a common voltage supply circuit for applying selectively the voltages 0, V_0, $2V_0$ and $3V_0$ to the respective section-like electrodes, so as to periodically apply to the display element to be turned ON the voltage $|3V_0|$ between each segment electrode and each sector-like electrode and so as to periodically apply to the display element to be turned OFF the voltage $|V_0|$ between each segment electrode and each sector-like electrode.

4,382,698

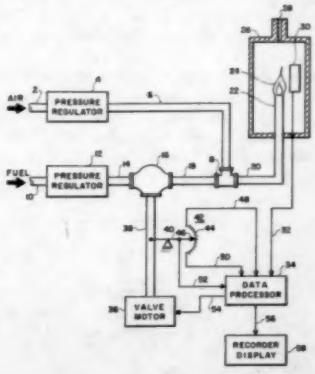
COMBUSTIBLE GAS ANALYZER

Eugene L. Szonntagh, Flourtown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 17, 1981, Ser. No. 244,537

Int. Cl.³ G01N *25/22*

U.S. Cl. 374—37 **10 Claims**



1. A combustible gas analyzer comprising

flow rate control means for supplying combustion air at a predetermined flow rate,

pressure control means for supplying a combustible gas to be analyzed at a constant pressure,

gas mixing means for mixing said air from said flow rate control means and a combustible gas to be analyzed,

valve means located between said pressure control means and said mixing means for performing a valving operation on a flow of a combustible gas to be analyzed to said mixing means, said valve means including a variable restriction and drive means for varying said restriction,

combustion means connected to an output of said mixing means for producing a combustion of a mixture of said air and said combustible gas from said mixing means,

detector means for detecting the oxygen content of combustion products from the combustion of said air and said combustible gas by said combustion means,

control means responsive to said detector means for producing a control signal for controlling said valving operation of said valve means to achieve a preselected oxygen content of said combustion products,

circuit means for applying said control signal to said drive means to effect a corresponding variation of said variable restriction,

monitoring means for monitoring the size of said restriction to produce a signal representative of the size of said restriction and

display means for displaying said signal from said monitoring means as an indication of the Wobbe Index of said combustible gas.

4,382,699

LABORATORY METHOD FOR TESTING THE EFFECTIVENESS OF RELEASE AGENTS FOR PREVENTING COAL FROM FREEZING TO THE SIDES OF COAL CARS

Roger W. Kugel, Winona, Minn., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 30, 1981, Ser. No. 325,696
Int. Cl.³ G01N *33/00, 17/00, 21/00*
U.S. Cl. 374—46 **1 Claim**

1. A method of testing additives for the ability to prevent coal particles from freezing and adhering to the sides of coal cars and metal storage devices which comprises the steps of:

(a) coating a chemical treatment to be tested on the inside of a small interior diameter steel or aluminum cylinder;

(b) soaking the thus-treated cylinder in water for a short time to simulate exposure to precipitation;

(c) immediately loading the water-treated cylinder with coal particles;

(d) compressing the coal within the cylinder;

(e) freezing the coal within the cylinder;

(f) removing the coal from the cylinder using means capable of measuring the force required to remove the coal; and

(g) comparing that force against the force required to remove the coal from a similar non-treated cylinder.

4,382,700

SHELF LIFE INDICATOR

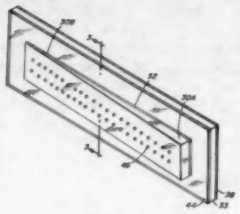
Fred R. Youngren, 31 Highland Ave., Lexington, Mass. 02173

Filed Oct. 14, 1980, Ser. No. 196,751
Int. Cl.³ G01K *3/06*
U.S. Cl. 374—102 **2 Claims**

1. An indicator comprising:

(a) a mass of ablative material whose ablation rate is a direct function of temperature;

(b) a colored strip disposed on one side of the ablative material such that as the ablative material evaporates, the strip is progressively exposed; and



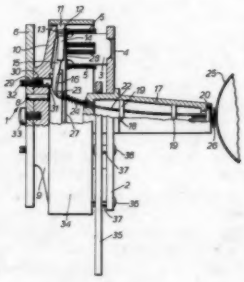
(c) means for holding the ablative material in position over the colored strip while allowing the evaporative products of the material to escape to the atmosphere.

4,382,701

WIRE MATRIX PRINTING APPARATUS

Keith B. Davenport, Sandhurst, England, assignor to International Computers Ltd., London, England

Filed May 27, 1981, Ser. No. 267,444
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **1 Claim**



1. A matrix print head including:

a base plate;

a nose piece secured to the base plate and extending from one face of the base plate;

a first wire guide secured to a first end of the nose piece remote from the base plate;

second wire guides secured to the nose piece intermediate the base plate and said first end;

a plurality of printing wires supported for lengthwise movement by said first and second guides, each printing wire having a printing end projecting from said first end of the nose piece and a ferrule mounted on a second end remote from the printing end;

spring means operating between the ferrules and the nose piece to urge the printing wires to a retracted position;

a plurality of U shaped magnetic yoke assemblies each including a pair of parallel limbs, said yoke assemblies being mounted on said base plate in a ring around a second end of the nose piece remote from said first end with said limbs extending from a second face, opposite said first face, of the base plate;

a pair of coils for each yoke assembly, the coils being mounted one on each limb of the yoke assemblies and electromagnetically coupled thereto;

a plurality of magnetic armatures each provided with a pair of oppositely extending pivots;

a frame including a plurality of radially outwardly extending

fingers, one for each magnetic yoke, and having apertures adjacent radially inner ends of the fingers;

a pair of spaced lugs on a radially outer end of each said finger having recesses receiving said pair of pivots of said armatures respectively to pivotally support the armatures for magnetic cooperation one with each magnetic yoke, the armatures extending radially inwards from the pivots and being provided with a projection on radially inner ends thereof engaging one with each ferrule on the printing wires;

a non-magnetic member extending between the armatures and free ends of all the limbs of the magnetic yokes effective upon energisation of said coils to maintain the armatures spaced from the yokes;

a plurality of resilient backstop buffers disposed one in each aperture in the frame for engagement by the armatures when the coils are un-energised and the printing wires are retracted;

and means adjacent the frame mounting adjustment screws engaging the backstop buffers operable to adjust the position of the backstop buffers individually in the frame.

4,382,702

MEMORY TYPEWRITERS WITH INTERCHANGEABLE TYPING ELEMENT

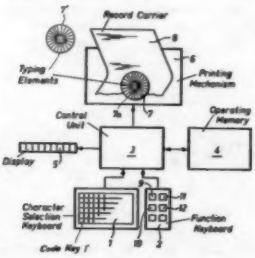
Rudolf Fessel, Jever, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,156

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939271

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—144.2 **7 Claims**



1. In a word processing machine for printing text in the form of successive lines of characters on a record carrier and including a character input keyboard for the input of character representations, means including at least one further key for the input of function instructions, a control unit connected to receive the representations and instructions provided by the keyboard and the means for the input of function instructions, an operating memory connected to the control unit, and a printing mechanism connected to be controlled by the control unit and constructed to operate with interchangeable typing elements, each typing element carrying a selected set of type characters each corresponding to a respective character representation, the improvement wherein: said means for the input of function instructions comprises means for effecting input of first function and second function instructions, input of the first instruction being effected when character representations are to be inputted which correspond to type characters carried by another typing element; and said control unit is responsive to the first function instruction for temporarily preventing printing of characters corresponding to character representations subsequently inputted via said character input keyboard and for storing each character representation together with the first function instruction and in a manner to indicate the intended location of the associated character on the record carrier, while causing said printing mechanism to leave a blank space at that intended location, and is responsive to the second function instruction, after said other typing element is introduced into said printing mechanism, for causing readout from said memory of the character representations stored together with the first function instruction and printing of the associated characters at the respective intended locations on the record carrier.

4,382,703

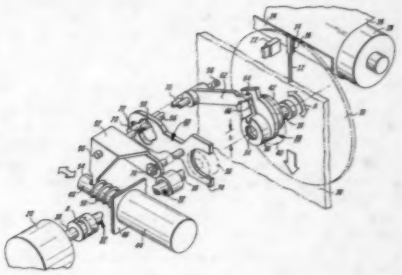
PRINT ELEMENT SHIFTER

Thomas D. Gross, Los Altos, and Brian E. Jagger, Union City, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,679

Int. Cl.³ B41J *25/24, 1/24*

U.S. Cl. 400—257 **6 Claims**



1. A print element shifting apparatus for moving a print element, provided with two circles of characters, between two operating positions, such that in one operating position the characters on one of the circles are in alignment with an impact element and in the other operating position the characters on the other circle are in alignment with the impact element, the apparatus characterized by including

means for supporting said print element for rotation about its axis and for movement transverse to its axis between said two operating positions,

rotating means for driving said support means,

means for coupling said support means and said rotating means,

shifting means movable between two end of travel positions and connected to said support means for moving said print element between said two operating positions,

driving means for moving said shifting means, first and second drive elements each having a variable mechanical advantage, and means for driving said shifting means with the drive element having the greatest mechanical advantage including load modifying linkage means coupled between said shifting means and said driving means for imparting movement to said shifting means alternatively from one or the other of said first and second drive elements.

4,382,704

FRICTION DRIVE IN PRINTERS

Wolfgang Hendrischk, Neu-Ulm, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,459

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1977, 2703345

Int. Cl.³ B41J *11/50*

U.S. Cl. 400—585 **2 Claims**

1. In a printer having a case, a friction advance for a plurality of sheets or webs to be printed on, the friction advance providing for positioning of the sheets or webs for positioning of the

sheets into particular printing positions, the combination comprising:

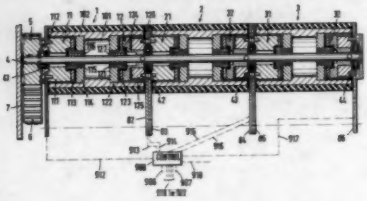
a plurality of support sheets, spaced side by side, at least some carrying bearings;

a shaft mounted in the bearings;

a plurality of electromagnet means respectively mounted on the support sheets and extending therefrom;

a plurality of hollow friction rolls; a brake means, and a secondary clutch member in each of the friction rolls, the friction rolls being mounted between the support sheets, and respective two of the plurality of electromagnet means extend into one of the rolls for respective operative connection to and cooperation with the brake means and the secondary clutch member therein, the secondary clutch member and the brake means in one of the rolls being also journalled on the shaft; and

primary clutch members secured to the shaft for respective cooperation with the secondary clutch members and the associated electromagnet means of the plurality.



4,382,705

TYPEWRITER WITH AN ERASING APPARATUS

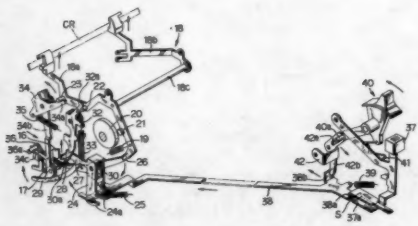
Hisao Kurachi; Takeo Itoh; Hiroshi Onoda; Kiyomichi Okado, and Susumu Kuzuya, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 20, 1981, Ser. No. 285,035

Claims priority, application Japan, Jul. 25, 1980, 55-102806

Int. Cl.³ B41J *29/36*

U.S. Cl. 400—697.1 **11 Claims**



1. A typewriter having an erasing apparatus wherein an error character is erased by striking a type key corresponding to the error character and which comprises:

means for printing selected characters on paper;

escapement means, responsive to actuation of said printing means, for effecting relative movements between said paper and said printing means;

erasing means for supporting an erase ribbon and moving same from an original position to an operating position upon the actuation of said printing means;

a retaining member movable to first, second and third positions and normally positioned at said first position to keep said erasing means inoperative, said retaining member, when positioned at one of said second and third positions, allowing said erasing means to be operative;

manual operating means, associated with said retaining member, for selectively positioning said retaining member in one of said second and third positions to enable said erasing means to be operative responsive to the actuation of said printing means;

locking means, associated with said retaining member and said erasing means, for holding said retaining member in one of said second and third positions, said locking means causing said retaining member to be held in said second position and permitting said retaining member to return to said first position in response to the return movement of said erasing means, said locking means holding said retaining member in said third position such that the retaining member in said third position allows said erasing means to be kept operative; and

escapement control means, associated with said erasing means, for disengaging said escapement means when said retaining member is in said second position, and keeping same operative while said retaining member is held in one of said first and third positions, whereby the erasing apparatus is capable of erasing a single character and typing in a correct character in place thereof while said retaining member is set in said second position, and is capable of erasing a series of characters in a consecutive manner in a direction in which the selected characters are printed by said printing means, while said retaining member is set and held in said third position.

4,382,706

MECHANICAL PENCIL

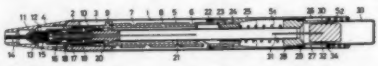
Yasuyuki Hashimoto, Nishinomiya, and Kazuo Shimizu, Neyagawa, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan

Filed May 4, 1981, Ser. No. 260,486

Claims priority, application Japan, May 7, 1980, 55-61475[U]; Aug. 6, 1980, 55-107098

Int. Cl.³ B43K *21/22*

U.S. Cl. 401—67 **7 Claims**



1. A mechanical pencil comprising hollow body means including first and second members interconnected for rotation relative to each other with said first and second members having axial openings at opposite ends of said body means, an axially movable inner mechanism including a lead case, a chuck secured to one end of said lead case adapted to grip a piece of lead, a chuck tightening member movably carried by said chuck for causing said chuck to grip and release a piece of lead and a push member coupled to said lead case and extending outwardly of said opening in said second member, and connecting means for converting relative rotation of said first and second members to axial movement of said inner mechanism to axially move said inner mechanism between a retracted position and a writing position extending through said opening in said first member, said inner mechanism being further axially movable by actuation of said push member when said inner mechanism is in said writing position to incrementally feed a supply of lead.

4,382,707

FELT TIP WRITING PEN

Gerold Anderka, Ellerbek, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Feb. 24, 1981, Ser. No. 237,803

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010944

Int. Cl.³ B43K *8/02*

U.S. Cl. 401—198 **5 Claims**

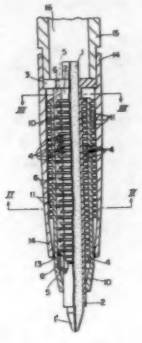
1. A tubular writing pen of the type having a cylindrical

hollow body supporting an ink reservoir at one end and a tubular felt tip pen extending from said ink reservoir through the front of said hollow body, comprising:

A. A tubular inner body having a bore that axially encompasses a longitudinally extending felt writing element extending from said ink reservoir at a posterior end to a felt tip anterior exit and defining:

i. An inner helically extending pressure equalization chamber along its outer wall and,

ii. a longitudinally extending non-capillary axial passage of generally rectangular cross section along the bore wall, formed so as to prevent communication between said bore and said inner chamber along the bore, but open to said writing felt along the co-extensive interior length thereof, the tubular inner body bore and passage being uninterrupted between the posterior end and anterior opening of the writing element inner body bore, except for the passage anterior end which communicates and opens into the anterior end of said inner chamber;



B. An intermediate body complementally engaging the exterior portions of said tubular body, so as to cover said inner pressure equalization chamber, said intermediate writing body defining along its exterior wall an outer helically extending pressure equalization chamber communicant with said inner chamber at the posterior end of said chamber;

C. An outer sleeve complementally engagable with said intermediate body, so as to cover said outer equalization chamber and define at its posterior end an ink reservoir seat and so as to define at its anterior end an axial annular groove intermediate said outer sleeve and said intermediate piece, so as to communicate with ambient air; and

D. An ink reservoir component complementally engagable with said outer sleeve and the posterior end of said writing body, so as to communicate with the posterior end of the writing instrument and the posterior end of said longitudinally extending axial groove.

4,382,708

PAPER COMPRESSOR

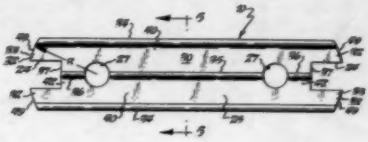
Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 94,037, Nov. 13, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,846

Int. Cl.³ B42F *13/06, 13/08, 13/10*

U.S. Cl. 402—15 **15 Claims**

1. A paper compressor comprising an elongated plastic body portion having a pair of opposite sides and a pair of opposite ends and a longitudinal axis, a hole spaced inwardly from each of said ends, and rib means molded integrally with said plastic body portion and extending longitudinally of said body portion, said body portion including an upper surface and a lower



surface, and said body portion being curved so that said lower surface is convex.

4,382,709

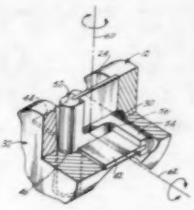
ON-AXIS FLEX WEB GIMBAL

Donald G. Brown, Newbury Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 30, 1981, Ser. No. 248,190

Int. Cl.³ F16D *3/00*

U.S. Cl. 403—57 **7 Claims**



4. A two-dimensional flexure coupling comprising first and second pairs of spaced apart thin flat flexure members, each pair lying in a common plane and each member of a pair having spaced parallel edges with said edges of the respective flexure members of a pair aligned with each other, said common planes being perpendicular to each other and intersecting along a line extending between the flexure members of both pairs, a first frame member secured to both flexure members of the first pair along one of said aligned edges, a second frame member secured to both flexure members of the second pair along one of said edges, and a rigid coupling member secured respectively to the remaining aligned edges of both pairs of flexure members.

4,382,710

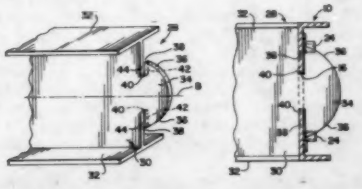
JOINT ASSEMBLIES BETWEEN STRUCTURAL MEMBERS

Joseph A. Slowbe, 3189 W. 73rd St., Cleveland, Ohio 44101

Filed Oct. 20, 1980, Ser. No. 198,709

Int. Cl.³ B25G *3/00*; **F16B** *9/00*; **F16L** *41/00*

U.S. Cl. 403—252 **15 Claims**



1. A joint assembly between first plate means and second plate means, said first plate means having opposite sides and peripherally closed non-circular opening means therethrough,

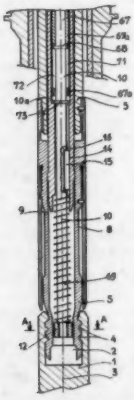
said opening means having a first axis and major and minor dimensions transverse to said first axis, said second plate means having a second axis and laterally opposite side edges extending in the direction of said second axis and spaced apart a distance greater than said minor dimension and less than said major dimension, whereby said second plate means can be introduced into said opening means with said opposite edges facing in the direction of said major dimension, said second plate means further including recesses extending laterally inwardly from said opposite side edges and having inner ends spaced apart a distance closely corresponding to said minor dimension, whereby said second plate means when in said opening means can be displaced about said first axis to a locking position in which said recesses receive said first plate means, and an opposed pair of resilient tab means on said first plate means and outwardly adjacent each of the opposite sides of said opening means in the direction of said minor dimension, the tabs of each said pair of tabs being spaced apart in the direction of said major dimension to receive a corresponding portion of said second plate means therebetween when said second plate means is displaced about said axis to said locking position.

4,382,711

DEVICE FOR THE REMOTE COUPLING AND UNCOUPLING OF TWO ELEMENTS OF GREAT LENGTH DISPOSED COAXIALLY AND END TO END

Claude Lafosse, Le Plessis Robinson, and Jacques Lepetit, Paris, both of France, assignors to Framatome, Courbevoie, France

Filed Aug. 29, 1980, Ser. No. 183,562
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—290 **5 Claims**



1. A device for the remote coupling and uncoupling of two elements of great length disposed coaxially and end to end, the first of said elements being a drive element axially displaceable between two extreme positions by displacement means, the second of said elements being a driven element exerting a force resisting the drive, said drive element comprising, at one of its ends, at least two resilient junction portions with deformation in a direction perpendicular to the axis of said elements, maintained spaced apart in junction position in which they engage in a seating formed at one end of said driven element, by a spacing member with axial displacement fixed to the end of a central rod disposed along the axis of the elements, said device comprising

(a) a cylindrical internal actuating sleeve (**14**) coaxial with said drive element (**5**), mounted for rotation about its axis on said drive element (**5**), and rigidly connected, for rotation about its axis, to said central rod (**10, 67**) carrying said spacing member (**12**), the dimensions of said spacing member (**12**) being asymmetrical in relation to its axis of revolution, whereby, upon rotation of said central rod (**10, 67**) about the axis of said device, said spacing member (**12**) is selectively located in a position for spacing apart said resilient junction portions (**8, 9**) and in a position out of service in which it is no longer in contact with said resilient portions (**8, 9**);

(b) a pin (**17**) disposed transversely in relation to the axis of said device, fixed to the end of the assembly consisting of said internal actuating sleeve (**14**) and said central rod (**10, 67**) opposite to the end rigidly connected to said spacing member (**12**); and

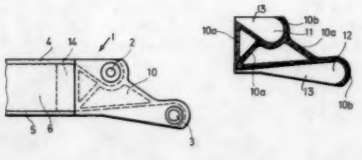
(c) an external actuating sleeve (**28**) coaxial with said drive element (**5**), having a diameter larger than the diameter of said internal sleeve (**14**), disposed in a fixed axial position in relation to said drive (**5**) and driven (**1**) elements, for rotation about its axis, connected to a means for driving in rotation (**30, 33, 35, 41, 43, 44**) in one direction and in the other with an amplitude of rotation equal to the angle of rotation necessary to displace said spacing member (**12**) between its positions in and out of service, and comprising, on its lateral surface, longitudinal slots (**45**), the axial displacement of said drive and driven elements (**1, 5**) positioning said pin (**17**), in the vicinity of one of the extreme positions of these elements, inside the slots (**45**) in said external actuating sleeve (**28**) which can then displace in rotation the assembly carrying said spacing member (**12**) to effect coupling or uncoupling of said drive (**5**) and driven (**1**) elements.

4,382,712

LOAD TRANSMITTING CONNECTING ELEMENT WITH BOLT EYES

Wolfgang Buchs, Valley, and Rolf Staedtler, Rosenheim, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,479
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032443
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—405 **12 Claims**



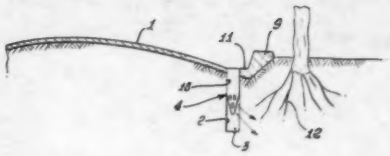
1. A load transmitting connecting element, comprising at least two bolt eyes for receiving respective bolts to connect such an element to another structural component also provided with bolt eyes, each bolt eye having a respective central axis, bridging web means operatively interposed between said two bolt eyes, said bridging web means having a main plane extending substantially at a right angle to said central bolt eye axes for bracing the bolt eyes relative to each other, said bridging web means having looping means looping around at least one of said bolt eyes approximately in a semicircular manner.

4,382,713

PAVEMENT WATER CONSERVATION METHOD

Sakae Kawahara, 1455-8 Hirotani-Cho, Funchu-City, Hiroshima-Pref, 726, Japan

Filed Jul. 30, 1980, Ser. No. 173,824
Int. Cl.³ E01F 5/00
U.S. Cl. 404—4 6 Claims



1. In combination with pavement and a cylindrical hole through the pavement and extending into the ground therebelow, the combination comprising

(a) a water receiver located in said hole in the pavement and ground, the receiver being hollow,

(b) said receiver having a top exposed to pass water into the receiver hollow interior, and

(c) said receiver having a water distributor in the hole below the pavement for sidewardly and downwardly distributing water, into the underground earth,

(d) said distributor having a downwardly tapering conical lower portion which contains through perforations spaced from the wall of the hole to pass water into the hole,

(e) said hole containing pebbles about said conical portion and perforations, and therebelow, the hole and pebbles extending downwardly to substantial depth below the lowermost extent of said distributor,

(f) the receiver having an associated upwardly domed closure across its upper end, the closure being perforated, the receiver filled with rocks or rock like pieces, below said closure,

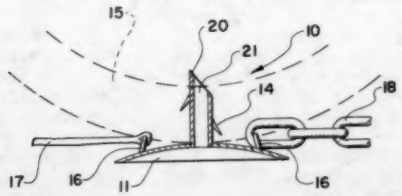
(g) and the receiver having a cylindrical shell body having a diameter between 5 mm and 300 mm, between said closure and said conical lower portion.

4,382,714

VEHICLE DISABLING MEANS

Walter G. Hutchison, 185 Bear Creek Rd., Asheville, N.C. 28806

Filed Mar. 6, 1981, Ser. No. 241,403
Int. Cl.³ E01F 13/00
U.S. Cl. 404—6 7 Claims



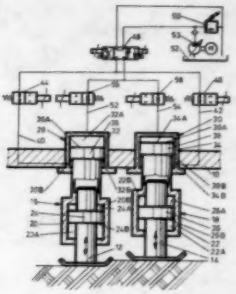
1. A vehicle disabling means comprising: a plurality of tire deflating means in the form of a relatively flat base with a hollow, spike like member perpendicularly disposed therefrom whereby when said spike like member penetrates the tire of a vehicle, the air within such tire will escape through the hollow in the spike; and means interconnecting said deflating means to allow rapid deployment and retrieval of said disabling means.

4,382,715

MASS COMPENSATED IMPACTING APPARATUS

Gülertan Vural, Emmelshausen, and Udo Carle, Höhr-Grenzhausen, both of Fed. Rep. of Germany, assignors to Koehring GmbH - Bomag Division, Bopard, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,592
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928870
Int. Cl.³ E01C 19/41
U.S. Cl. 404—133 21 Claims



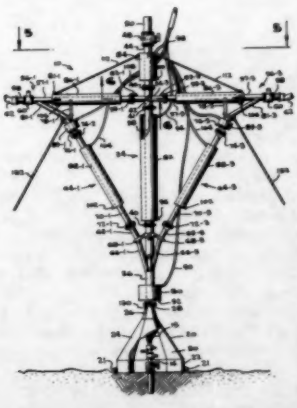
1. In a mass compensated impacting apparatus composed of at least one pair of impacting tools and a common tool carrier supporting the tools, the improvement comprising a two-mass vibration excitation system associated with each said tool and including vibrating masses which are positively linearly guided in an essentially non-resilient manner, and means driving said vibratory masses with phase relationships such that the resulting average of all mass forces becomes at least approximately zero.

4,382,716

BLOWOUT RECOVERY SYSTEM

Troy Miller, 3463 Castleton Way North, Lexington, Ky. 40502

Filed Mar. 2, 1981, Ser. No. 239,243
Int. Cl.³ E02B 15/04
U.S. Cl. 405—60 11 Claims



1. A marine blowout recovery system for recovering the effluent from an underwater well blowout including:

a towable submergible vehicle comprising: an effluent entrapment shell having a hollow interior chamber positionable over a well blowout and having a downwardly facing bot-

tom opening for permitting the flow of effluent into said hollow interior chamber; tubular outflow means communicating on one end with an upper portion of said hollow interior chamber for receiving effluent therefrom; and hollow floatation tank means mounted on said tubular outflow means connected to a controlled source of pressurized air for providing a desired amount of buoyancy to effect raising or lowering of the entire submergible vehicle when positioned beneath the surface of a marine environment;

flexible hose means connected on one end to said tubular outflow means for receiving effluent therefrom and connected on an opposite end to separation and storage means into which said effluent is discharged.

4,382,717

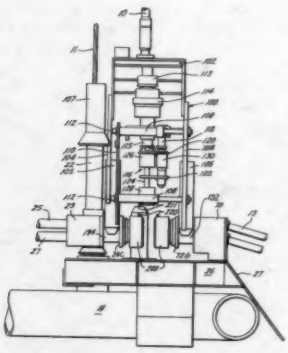
CONNECTION OF UNDERWATER LINES

Charles D. Morrill, Bellaire, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 973,895, Dec. 28, 1978, abandoned. This application Jul. 13, 1981, Ser. No. 283,094

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **24 Claims**



1. Apparatus for remotely connecting a pair of axially aligned underwater hubs, comprising:

a collar on each hub,

a connector tool including a rigid main frame and a subframe horizontally slidably mounted on said main frame,

a first fork fixedly mounted on said main frame and a second fork mounted on said subframe,

a seal member supported from said subframe,

means for lowering said connector tool through the water to a position such that each fork is engaged behind a hub collar and said seal member is between the hubs,

first fluid powered means mounted on said subframe for applying force to said hubs to move them axially toward each other whereby said hubs are moved into sealing engagement with said seal member,

connecting means releasably carried by said connector tool for connecting said hubs together in sealing engagement with said seal member, and

second fluid powered means mounted on said subframe operably engaging said connecting means for moving the connecting means laterally into engagement with said hubs.

4,382,718

VERTICALLY MOVABLE MARINE WORKING PLATFORM STRUCTURE HAVING VERTICALLY MOVABLE GROUNDABLE SUPPORT FRAMES

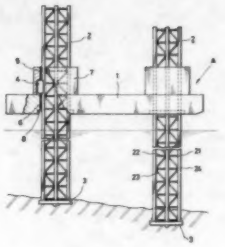
Takehisa Inoue, and Shigeru Koshikawa, both of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,339

Claims priority, application Japan, May 20, 1980, 55-67553

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—196 **4 Claims**



1. A vertically moveable, marine working platform structure having vertically moveable, groundable support frames, comprising a working platform; a plurality of groundable support frames each of which consists of a plurality of cords arranged vertically in parallel with one another, a plurality of horizontal members both ends of each of which are joined to panel point portions of said cords, and a plurality of diagonal members both ends of each of which are joined to the panel point portions of said cords, and a plurality of diagonal members both ends of each of which are joined to the panel point portions of said cords, each of said support frames being vertically moveably fastened to said working platform; means mounted on said working platform for vertically moving each of said support frames, each such means being disposed partially in a recess provided in an upper surface portion of said working platform; and upper and lower support frame-holding guides provided in said working platform and having a length at least greater than the distance between two vertically adjacent panel point portions of said cords.

4,382,719

METHODS OF REINFORCING AND STABILIZING AN EARTH STRUCTURE, AND A STABILIZER SET THEREFOR

James J. Scott, Lecoma Star Rte., Rolla, Mo. 65401

Filed Mar. 27, 1981, Ser. No. 248,056

Int. Cl.³ E21F *21/00*

U.S. Cl. 405—259 **15 Claims**

1. A method of stabilizing an earth structure from within a bore formed in the structure, comprising the steps of:

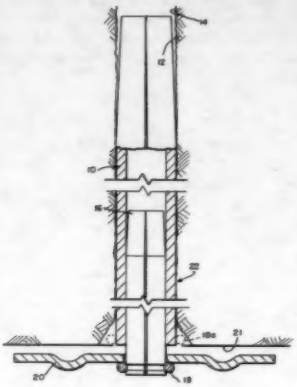
inserting into the bore a radially contractible and expandable friction rock stabilizer which has an elongate, substantially hollow body having inner and outer surfaces; and

fastening a plate, having a cut-out formed therein, against the earth structure in substantially surrounding relationship to the bore; wherein

said plate-fastening step comprises engaging said plate by penetrating the cut-out formed therein with an elongate, substantially hollow, radially contractible and expandable element which has an externally-projecting bearing surface; and

inserting said element into said body into fast, frictional engagement with said inner surface, along a substantial length of said element, and from one end of said stabilizer

to an intermediate location along the length thereof until said bearing surface closes into contacting engagement with the plate to fasten the plate against the earth structure.

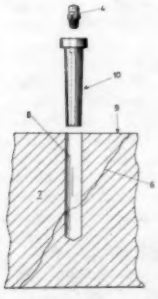


4,382,720

INJECTION LINER FOR A BOREHOLE CLOSURE

Walter Vonach, Bregenz, Austria, assignor to Wilfried Scheiber, Kennelbach, Austria

Filed Jan. 29, 1981, Ser. No. 230,069
Claims priority, application Austria, Jan. 30, 1980, 488/80
Int. Cl.³ E02D *5/18*
U.S. Cl. 405—269 **11 Claims**



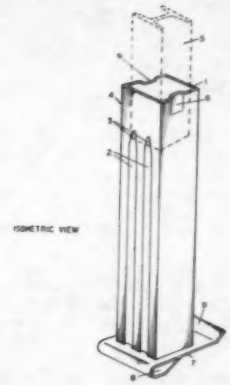
1. Injection line for use as a borehole closure in masonry or rock including a nipple having a first axially extending threaded part and an axially extending second part extending from said first part for connecting said liner to a source of material to be injected into the borehole, said liner comprises an axially elongated unitary tubular shaft forming an axially extending bore therethrough, said shaft having a leading end arranged to be inserted first into the borehole and a trailing end arranged to be located adjacent to and outwardly from the opening into the borehole, said shaft is frusto-conically shaped and tapers inwardly from the trailing end to the leading end of said shaft so that said shaft can be placed into and then secured tightly in place within the borehole with the trailing end projecting from the borehole, said shaft is formed of an impact resistant plastics material, said first threaded part of said nipple is threaded into engagement within the trailing end of the bore through said shaft, whereby a material can be pressure injected through said nipple and liner into the borehole and after the completion of the material injection a sidewards hammer blow to the part of said liner protruding outwardly from the borehole can break off the protruding portion at a location slightly inwardly of the opening to the borehole.

4,382,721

MINE ROADWAY SUPPORT STILT

Norman S. King, Newcastle-Upon-Tyne, England, assignor to Holywell Engineering Limited, England

Continuation of Ser. No. 57,583, Jul. 16, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,403
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—288 **1 Claim**



1. A mine roadway support stilt for use with an I-beam joist support, said roadway experiencing lateral strata movement, which comprises:

a hollow steel tube of generally rectangular section dimensioned to permit the longitudinal insertion therein of said joist support;

a plurality of longitudinally inwardly extending indentations on two opposing faces of said tube, said indentations being deformed by said joist as said joist is forced downwardly into said tube by external force, said longitudinally extending indentations extending from the bottom of said tube to within a predetermined distance from the top of said tube thereby to provide overlap between said tube and said inserted joist support so as to provide sufficient rigidity therebetween to prevent lateral displacement of said stilt or said joist support before deformation of said longitudinally extending indentations commences, and the upper end of each longitudinally extending indentation sloping inwardly at a gradual angle of from 3¼ to 5 degrees from the vertical to cause the initial deformation of said indentations to be smooth and positive;

means for inhibiting the improper insertion of said joist support within said tube including at least one medial, inwardly extending, indentation formed at the upper end of each of the two remaining opposing faces of said tube; and

a rectangular base plate mounted to the bottom of said tube, the leading edge of said plate for projecting into the mine roadway being bent upwardly through an acute angle to form a lip thereby to prevent lateral displacement of said stilt and the opposite edge of said plate being extended backwards and under the body of said plate to form a raised heel thereby to cause said plate to slope at a predetermined angle relative to the horizontal mine roadway floor on which it stands thereby resisting said lateral strata movement.

4,382,722

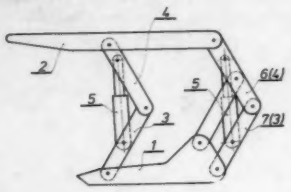
NINE LINING STRUCTURE

Stanislaw Romanowicz, Gliwice; Wojciech Skoczynski, Katowice, and Edward Janik, Bytom, all of Poland, assignors to Centrum Konstrukcyino-Technologiczne Maszyn Gorniczych "KOMAG", Pszczynska, Poland

Filed Feb. 2, 1981, Ser. No. 230,419

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—291 **3 Claims**



1. A mine lining structure comprising a sill piece, a roof bar and a plurality of spragging levers interconnecting said sill piece and said roof bar characterized in having one lever pivotally connected at one of its ends to said sill piece, in having a second lever pivotally connected at one of its ends to said roof bar, said one and said second levers being pivotally connected together at ends opposite said sill piece and roof bar to form a pair of connected levers in the form of a horizontally extending V with the apex of the V adopted to extend towards a mine fall; and in having a hydraulic actuator comprising a hydraulic cylinder and piston rod slidable therein operatively positioned between said pair of levers with an end of said cylinder pivotally connected to one of said levers forming said pair and one end of said piston rod pivotally connected at one end to the other of said levers forming said pair whereby movement of said piston rod relative to said hydraulic cylinder will cause movement of the roof bar and sill piece relative to each other.

4,382,723

SILO FOR STORAGE OF POWDER-LIKE COMMODITIES

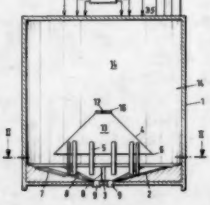
Hermann Möller, Hamburg, Fed. Rep. of Germany, assignor to Fa. Johannes Möller Hamburg GmbH & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 244,960

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010499

Int. Cl.³ B65G *65/00, 53/40*

U.S. Cl. 406—90 **24 Claims**



1. A silo for storage and homogenization of powder-like commodities, such as flour, comprising a housing defining a chamber and having an outlet; inlet means for receiving the commodity into said housing; means communicating with said outlet for discharging the commodity from said housing; a bottom wall inclined downwardly towards said outlet; a hollow cone positioned in said housing and upwardly spaced from said bottom wall and having an open underside and an apex formed with a ventilation opening communicating with said chamber; means for admitting air in upward direction into the commodity beneath said cone, so that the air rises therein and escapes through said ventilation opening; and aerating means surrounding said ventilation opening for aerating the commodity in said chamber in the region about said ventilation opening.

4,382,724

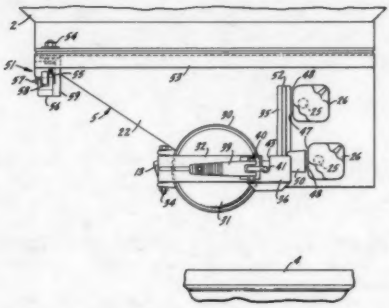
HOPPER DISCHARGE ARRANGEMENT

Daniel R. Green, Griffith, Ind., assignor to Union Tank Car Company, East Chicago, Ind.

Filed Apr. 30, 1981, Ser. No. 259,290

Int. Cl.³ B65G *53/50*; B61D *7/22*

U.S. Cl. 406—130 **13 Claims**



1. A hopper for unloading a commodity through an opening in a vessel, comprising:

A. valve means for controlling flow through said opening, operating means for opening and closing said valve means, said operating means having an end extending outside of said hopper;

B. means defining a commodity outlet below said opening, a removable cap for sealing said outlet, said cap being pivotable about a vertical axis toward and away from said outlet to its closed and open positions;

C. means attached to said cap engaging said end of said operating means so as to prevent movement of said operating means and thereby to hold said valve means closed when said cap is in its closed position; and

D. a latching mechanism for holding said cap in its closed position including:

1. an arm attached to the center of said cap, one end of said arm being pivotable about a vertical axis;

2. a link pivoted at one end about a horizontal axis, said link being received in a vertical notch in said arm; and

3. a cam lever pivotally attached to the other end of said link, said lever being pivotable about a vertical axis and having a camming surface engaging the outside of said arm so as to lock said cap into its closed position.

4,382,725

PNEUMATIC OUTLET VALVE

Richard H. Dugge, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

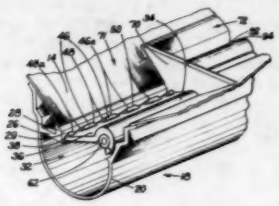
Filed Apr. 3, 1981, Ser. No. 250,793

Int. Cl.³ B61D *7/00*

U.S. Cl. 406—131 **20 Claims**

1. A rotatable control valve comprising: a control valve body portion having a longitudinal axis and a moment portion extending outwardly from said body portion to establish a moment about said axis; said moment portion including a distal edge portion which in closed position engages an adjacent moment portion valve seat; said moment portion including at

least one extension extending outwardly from said distal edge portion in a direction generally perpendicular to said moment portion; said extension including a pattern of projections and recesses for metering flow of lading into a discharge tube



having a discharge opening located below said control valve and arranged to reduce or eliminate pellets from becoming trapped in the discharge opening; said projections arranged to guide pellets away from the discharge opening.

4,382,726

BORING TOOL

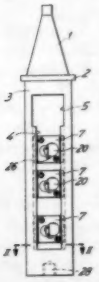
Bruno Jud, Ruggell, Switzerland, assignor to Jud AG, Switzerland

Continuation of Ser. No. 58,843, Jul. 19, 1979, abandoned. This application May 11, 1981, Ser. No. 262,651

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843778

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—197 **5 Claims**



1. A boring tool comprising:

an elongate stem having a longitudinal axis, said stem defining a trapezoidal dovetail slot parallel to said axis, the base of said slot being nearest said axis with the inwardly tapering sides extending from the base away from said axis;

a trapezoidal toolholder having parallel inner and outer surfaces and angled sides tapering inwardly from said inner surface to said outer surface, said trapezoidal dovetail slot sized for sliding engagement of said toolholder within said slot;

access means defined by said stem for inserting said toolholder into said slot;

a rod-shaped cutting means having an inner end and a cutting end;

said toolholder having a radially extending through bore between said parallel inner and outer surfaces sized for receipt of said cutting means;

said cutting means including screw means for adjusting the length of said rod-shaped cutting means so that said inner end abuts said base of said slot;

said toolholder having at least one threaded bore extending between said inner and outer surfaces and at least one threaded hole extending transverse to said radially extending bore between said radially extending bore and an outside surface of said toolholder;

said cutting means including means for removably mounting a cutting plate at said cutting end of said cutting means and said bore including a recess portion extending into said toolholder form the outer surface thereof sized for receipt of at least a substantial portion of said cutting plate mounting means;

first screw means threadably engaged within said threaded hole for locking said cutting means within said radially extending bore; and

second screw means threadably engaged within said threaded bore for securing said tool holder and cutting means therewith within said slot.

4,382,727

CONTOUR COPYING MACHINE

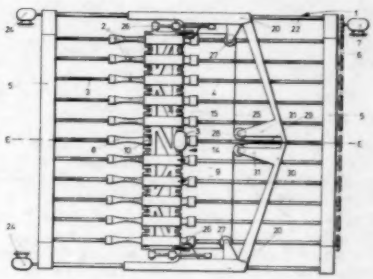
Erich Schmidt, Mauerbach, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges., Vienna, Austria

Filed Sep. 12, 1980, Ser. No. 186,660

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937249

Int. Cl.³ S27C *5/00*

U.S. Cl. 409—105 **14 Claims**



8. In a contour copying machine having means for supporting at least one pattern and at least one workpiece rotatably about parallel respective pattern and workpiece longitudinal axes, means for synchronously rotating said pattern and said workpiece about said respective axes, at least one copying roller engageable with said pattern and at least one tool engageable with said workpiece, first and second guide means situated on opposite sides of the machine, first and second guide shears movably mounted on said first and second guide means, respectively, for supporting said copying roller and said tool, said copying roller and said tool being rigidly interconnected and synchronously movable, together with said first and second guide shears, along the longitudinal axis of said workpiece, and means for urging said copying roller and said tool against said pattern and said workpiece, respectively, for machining said workpiece accurately and reproducing therein the contours of said pattern, the improvement comprising:

(a) a rigid support frame movably mounted on, and extending between, said first and second guide shears for supporting and rigidly interconnecting said copying roller and said tool in proximate relation to one another, said support frame being aligned transversely to the longitudinal axis of said workpiece;

(b) traction means connected to said support frame at points thereon situated symmetrically with respect to said copying roller; and

(c) biasing means operatively connected to said traction means, said means for urging said copying roller and said tool against said pattern and said workpiece, respectively, including said support frame, said traction means and said biasing means; the improvement further comprising a

brace extending between and rigidly connecting said first and second guide shears, said biasing means being secured to said brace.

4,382,728

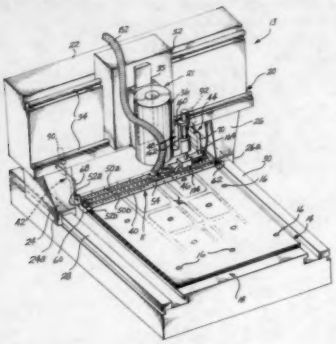
WORKPIECE RETAINING PRESSURE-FOOT ASSEMBLY FOR ORTHOGONALLY MOVABLE MACHINE TOOL

Birger O. Anderson, Bellevue, and David L. Wagner, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 25, 1979, Ser. No. 88,018

Int. Cl.³ B23C *1/06*; B23Q *3/06, 11/02*

U.S. Cl. 409—137 **17 Claims**



5. In combination with a machine having a cutter means movable toward and away from and parallel to a flat workpiece support surface, an improved workpiece hold-down apparatus for holding a workpiece of substantially uniform thickness against said support surface in proximity to said cutter means, comprising:

a rail means disposed parallel to the plane of said support surface, said rail means including first and second spaced parallel rails;

pressure-transmitting roller means disposed between said rail means and said support surface for riding over the adjacent surface of a workpiece laid against said support surface and for cooperating with said rail means for transmitting a force applied to said rail means in a direction normal to said support surface onto said workpiece, said pressure-transmitting roller means including first and second sets of pressure rollers mounted for rotation beneath said first and second rails respectively such that said first and second rails and said first and second sets of rollers form a free space therebetween for receiving said cutter means, said roller means being oriented for accommodating movement of said rail means relative to said support surface, and to a workpiece laid thereagainst, in a direction transverse to said rail mean;

truck means mounted for travel along said rail means, said truck means including a truck having wheels that ride on said first and second rails and a body that straddles said first and second rails and overlies said free space therebetween; and

coupling means associated with said cutter means for coupling said truck means with said cutter means for conjoint movement thereof relative to said rail means and the underlying workpiece support surface, said coupling means including means for urging said truck means against said rail means in a direction oriented toward said workpiece surface so as to apply a workpiece-retaining pressure that is directed normal to said support surface and that is transmitted by said roller means to a workpiece that is to be retained during cutting by said cutter means.

11. In the combination of claim **5**, further comprising a chip suction hood means mounted to said truck and having an entry opening that projects from said truck downwardly between said first and second rails and said first and second sets of pressure rollers toward said workpiece support surface and a workpiece laid there against.

4,382,729

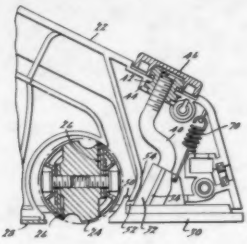
DEPTH OF CUT ADJUSTMENT MECHANISM FOR A POWER PLANER

Rainer Bachmann, Hohenstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 2, 1980, Ser. No. 194,840

Int. Cl.³ B27C *1/10*

U.S. Cl. 409—178 **8 Claims**



1. A portable power planer, comprising:

a housing incorporating a motor driven cutting blade;

an adjustable shoe;

position control means, rotatably mounted in said housing so as to be fixed against elevational movement with respect thereto, for controlling the depth of cut of the cutting blade;

said housing and said adjustable shoe having coacting parts for guiding the elevational movement of said shoe and for preventing rotation of said shoe with respect to said housing;

said coacting parts comprising parts of said shoe extending upwardly from the base of said shoe and forming an upwardly inclined slot therebetween, and an internal downwardly projecting wall portion of said housing engaging in said slot;

a substantially S-shaped rod disposed within said housing and fastened at its lower end to said shoe and threadedly engaged at its upper end to said position control means such that rotation of said position control means results in elevational adjustment in the position of said shoe relative to said housing;

the axes of the upper and lower ends of said S-shaped rod being parallel and inclined to the base of said shoe;

a tension spring connected between said shoe, adjacent said rod, and said housing, and drawing said shoe towards said housing to firmly hold said shoe in the elevational position set by said position control means; and

the axes of the upper and lower ends of said S-shaped rod, the axis of said tension spring, and the upward inclination of said slot all being substantially parallel.

4,382,730

PNEUMATICALLY OPERATED SPINDLE WRENCH

Rudolf Reinisch, 5403 Ocean View Blvd., La Canada, Calif. 91011

Filed Feb. 20, 1981, Ser. No. 236,156

Int. Cl.³ B23C *5/26*

U.S. Cl. 409—233 **4 Claims**

1. In a spindle wrench for a vertical milling machine, the improvement comprising:

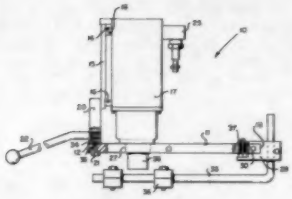
a platform linear member having a first and second end terminus and a linear axis of symmetry there between,

a first vane member pivotally secured normal and central to said first platform member end terminus,

a second vane member pivotally secured normal and central to said first platform member end terminus and disposed parallel to said first vane member,

a lever arm secured normal in and to said second vane member, providing manual pivoting torque to said vane member,

a rod securing means pivotally adapted and secured in a slotted aperture disposed at said second end terminus of said platform member, said rod securing means pivoting normal to said platform linear axis of symmetry,



a rod means adaptively secured in said rod securing means, providing means for securing said spindle wrench operatively adjacent a drawbar first terminus, and,

a socket wrench sized and adapted to operatively secure to said drawbar first terminus on signal from said lever arm, said socket wrench rotatively powered and operated by a powered motor adaptively sized and secured through said platform linear member adjacent said linear member first terminus, said powered motor rotated on signal by said first and second vane members, pivotally manually operated by said lever arm in cooperation.

4,382,731

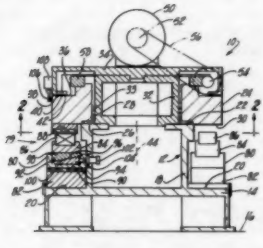
ROTARY MACHINING APPARATUS

Russell L. Rigdon, 3272 Pine Valley Dr., Sarasota, Fla. 33579

Continuation-in-part of Ser. No. 88,770, Aug. 29, 1981, abandoned. This application Sep. 16, 1981, Ser. No. 302,838

Int. Cl.³ B23D *37/14, 43/06*

U.S. Cl. 409—248 **8 Claims**



1. Apparatus for machining a flat surface on a workpiece comprising:

a frame;

an annular wheel and means for rotatably mounting said wheel to said frame about a predetermined axis of rotation;

a plurality of circumferentially spaced cutting members mounted to one axial surface of said wheel;

a workpiece holding fixture mounted to said frame at a position open to, spaced from and axially aligned with said one axial surface of said wheel, said fixture including means for holding the workpiece with the surface to be machined adjacent said one surface of said wheel;

means for continuously rotating said wheel;

means for selectively axially moving the fixture toward said wheel whereby said cutting members engage and machine said workpiece surface,

wherein said cutting members are broaching tools which protrude axially outwardly from said wheel in a progressively increasing amount around the circumfery of said one surface of said wheel in a direction opposite from the direction of rotation of said wheel, said broaching tools extending only around a portion of the circumfery of said one surface of said wheel thus forming an open area on said one wheel surface having a tangential length greater than the width of the workpiece,

wherein said means for axially moving said workpiece further comprises means for incrementally moving said workpiece toward said wheel surface during each revolution of said wheel when said workpiece is aligned with the open area of said wheel surface, and

wherein said cutting members in the circumferential area adjacent said open area of said wheel in the direction of rotation of said wheel are finish cutting members, said apparatus further comprising means for axially selectively retracting said finish cutting members away from said workpiece and for axially extending said finish cutting members toward and into engagement with said workpiece during the final incremental rotational cutting cycle for a given workpiece.

4,382,732

MACHINING STATION FOR A PRODUCTION LINE FOR OPTICAL FIBER CABLE ELEMENTS

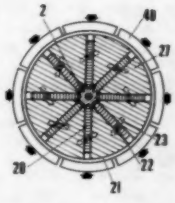
Jean P. Hulin, and Gilles DuBois, both of Conflans Ste. Honorine, France, assignors to Lignes Telegraphiques et Telephoniques, St. Honorine, France

Filed May 12, 1980, Ser. No. 148,992

Claims priority, application France, May 15, 1979, 79 12282

Int. Cl.³ B23D *1/20, 13/02*

U.S. Cl. 409—304 **3 Claims**



1. A station for continuously machining grooves in a member such as an optical fiber cable support, comprising:

a plurality of teeth, whose number is equal to that of the grooves to be machined, each of said teeth including a solid body provided with a pin, and a thin cutting tip;

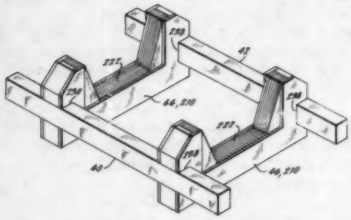
an annular structure having a groove and a plurality of radial recesses, the number of said recesses being the same as that of said teeth, each of said teeth issuing at the two ends of each said recess, each said recess including a first radially inner portion serving as a guide for the tooth tip therein, and a second radially outer portion housing said solid body of said tooth, said inner and outer portions being separated by a shoulder;

a ring positioned in said groove in said annular structure, said ring including radial recesses and a plurality of curved slots, each of said slots engaging said pin of one of said teeth;

a plurality of pawls positioned in said recesses of said ring, said pawls including fingers penetrating into said slot of said ring, said pawls cooperating with said pins by means of said fingers which penetrate into said slots of said ring;

a collar engageable with said pawls for controlling said pawls and said ring;
means for translating said annular structure parallel to the direction of travel of said member;
means for heating each said tooth; and
means for controlling the temperature of each said tooth.

4,382,733
FREIGHT CRADLE WITH REPLACEABLE DEFORMABLE CUSHIONING INSERT
Kenneth G. Rodgers, 57, Aster Dr., Werrington, Peterborough, Cambridgeshire, England
Filed Nov. 1, 1979, Ser. No. 90,239
Claims priority, application United Kingdom, Nov. 2, 1978, 42920/78; Dec. 21, 1978, 49711/78
Int. Cl.³ B60P 1/64, 7/12; B61D 3/16, 45/00
U.S. Cl. 410—49 18 Claims

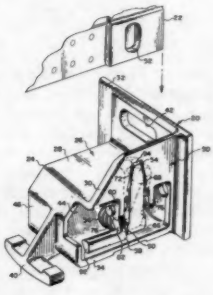


1. A cradle including at least two generally parallel laterally-extending bearers made of a first material, and at least two longitudinally extending connection members, each of the connection members being releasably attached to the bearers in such a manner that the bearers can be spaced apart any desired distance along the length of the connection members; and each of the bearers being constructed to define a pocket; and
an approximately U-shaped cushioning pad removably received in the pocket, the pad being comprised of a plurality of multi-wall boards laminated together, the pad being adapted to be received in the pocket with such an orientation as to receive on the edges of the multi-wall boards the weight of any object placed in the recess, the pad being constructed to define a recess for receiving an article to be carried; and the recess in the pad further being so shaped that the pad will be slightly permanently deformed when an article to be carried is inserted therein.

9. In combination, a bearer for use in constructing an article-carrying cradle, the bearer being made of a first material, the bearer comprising a pair of spaced posts extending upwardly from a base member, the posts and the base member having contiguous recesses which constitute a rectangular space for receiving a pad of high density high strength cushioning material; and a cushioning pad removably received in the rectangular space defined by the contiguous recesses of the bearer, the pad being comprised of a plurality of multi-wall boards laminated together, the pad being adapted to be received in the pocket with such an orientation as to receive on the edges of the multi-wall boards the weight of any object placed in the recess, the pad being constructed to define a recess for receiving the article to be carried, the recess in the pad being partly bounded by two inclined surfaces each of which makes an obtuse angle with the horizontal; and the recess in the pad further being so shaped that the pad will be slightly permanently deformed when an article to be carried is inserted therein.

12. A cradle including at least two generally parallel laterally-extending bearers, and at least two longitudinally extending connection members, each of the connection members being releasably attached to the bearers, in such a manner that the bearers can be spaced apart any desired distance along the length of the connection members; and each of the bearers being constructed of synthetic plastics material and being constructed to define a pocket; and
an approximately U-shaped cushioning pad adapted to be recieved in the pocket, the pad being comprised of a plurality of multi-wall boards laminated together, the pad being adapted to be received in the pocket with such an orientation as to receive on the edges of the multi-wall boards the weight of any object placed in the recess, the pad being constructed to define a recess for receiving an article to be carried; and the recess in the pad further being so shaped that the pad will be slightly permanently deformed when an article to be carried is inserted therein.

4,382,734
CARGO SECUREMENT DEVICE
Stanislaw Synowiec, Chicago, and Emil J. Hlinsky, Oak Brook, both of Ill., assignors to MacLean-Fogg Company, Mundelein, Ill.
Filed Apr. 10, 1981, Ser. No. 252,829
Int. Cl.³ B60P 1/64, 7/13; B61D 45/00
U.S. Cl. 410—70 15 Claims



1. A container pedestal for a cargo container which is lowered onto and lifted from the pedestal, the container having a latch recess, said container pedestal comprising: a base defining a container receiving support, a latch lever, means mounting the latch lever for both pivotal movement and vertical movement with respect to said base, a nose portion on said lever engageable by the container upon lifting and lowering of the container to effect pivoting of the lever from a latched to a released position, said nose portion being received into the container latch recess in the latched position of said lever, locking means defined on said lever and said base inter-engaging the lever and the base for preventing pivotal movement of said lever when said lever is in an upper position, spring means for urging said lever toward the latched position in the pivotal direction and toward the upper position in the vertical direction, and cam means selectively operable to hold said lever in a lower position.

4,382,735
CARGO SECUREMENT DEVICE
Stanislaw Synowiec, Chicago, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.
Filed Apr. 10, 1981, Ser. No. 252,830
Int. Cl.³ B60P 1/64, 7/13; B61D 45/00
U.S. Cl. 410—70 7 Claims

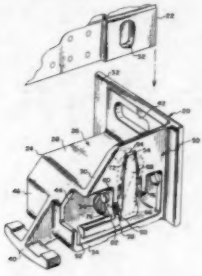
1. A latch assembly for a cargo securement system of the type permitting automatic cargo container loading and unloading, said latch assembly comprising in combination:
support means for supporting a cargo container;
a latch structure including a latch lever having a container engaging latch engageable with said container and a spring engaging ridge longitudinally spaced from said container engaging latch;

pivot means mounting said latch lever on said support means for pivotal movement of said container engaging latch between a container engaging and a container releasing position;

a helical compression spring interposed between said support means and said spring engaging ridge for urging said container engaging latch toward the container engaging position;

said spring engaging ridge of said latch lever defined by adjacent latch lever surfaces intersecting to form said ridge, said ridge maintaining contact with said spring across a ridge engaging end of said spring so that the latch lever can pivot with respect to said spring end about said ridge between container engaging and container releasing positions while maintaining contact transversely across said spring end at said ridge.

7. A latch assembly for a container pedestal of the type



operated between latched and unlatched positions in response to movement of a container pedestal along a path toward and away from the pedestal, said latch assembly comprising a pivot member, a latch lever pivoted on said pivot member and having a nose portion movable into the container path and movable out of the container path in response to engagement by the container effective to pivot said latch lever through a predetermined angle, a pair of generally flat surfaces on said latch lever, said surfaces intersecting at a ridge and defining an included angle which is generally equal to or smaller than the supplementary angle to said predetermined angle, a spring having a generally flat end, and means holding said spring in compression against said latch lever ridge transversely across said flat spring end for biasing said nose portion into said path, said spring end engaging said ridge so that the latch lever can pivot with respect to said flat spring end about said ridge between latched and unlatched positions while maintaining contact transversely across said flat spring end at said ridge.

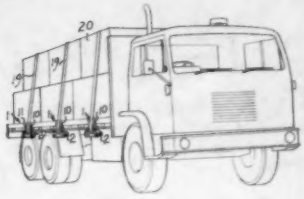
4,382,736

BELT WINCH MOUNTING ON VEHICLE RAIL

Allan R. Thomas, 39 Samuel St., Maitland, South Australia, Australia

Filed Aug. 13, 1979, Ser. No. 65,853
Int. Cl.³ B60P *7/08*; B61D *45/00*; B66D *1/60*
U.S. Cl. 410—104 **6 Claims**

1. A belt winch apparatus for holding load-holding belts on vehicles including load carrying trays and tie rails, the apparatus being of a type including a frame supporting a rotatable belt drum, and locking means adapted to releasably lock the rotation of the drum, the apparatus being characterized by interlocking means secured to the frame and adapted to interlock with and between a tie rail and the side of a vehicle, the tie rail being below and spaced from the vehicle side so that the belt drum can be supported beneath the tie rail in a position to tighten and hold, under tension, a loadholding belt, the interlocking means including a member shaped to have, when in the interlocking position, one portion adapted to engage against a rearward side of the tie rail, and a second portion to engage an outer side of the load carrying tray of the vehicle above the tie rail, these portions cooperatively acting to resist turning of the belt winch apparatus when holding a load-holding belt under tension and a further portion arranged to support the frame even when there is no tension with respect to the belt, and



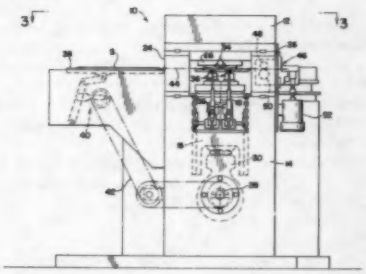
the interlocking means also including a member each having a lower end secured to the frame and an upper end aligned with an outer side of the frame.

4,382,737

CAN END MAKING APPARATUS

James W. Jensen; Stanley J. Miller; Eugene W. Heniser, all of Hastings, Mich.; Donald P. Dalman, Rutland, Vt., and Garth A. Grevenstuk, Wayland, Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Mar. 5, 1981, Ser. No. 240,788
Int. Cl.³ B21D *51/00*
U.S. Cl. 413—56 **64 Claims**



1. Can end making apparatus comprising, a press having frame means providing tool support means, slide means, a plurality of opposed pairs of tooling, each said opposed pair of tooling including first die means on said tool support means and second die means supported on said slide means, means supporting said slide means for reciprocation vertically between first and second slide positions, said first and second die means being spaced apart in said first slide position, means to feed sheet material between said first and second die means and along a horizontal feed path when said die means are spaced apart, said first and second die means being cooperable in said second slide position to partially form a can end from sheet material therebetween, said partially formed can end being cup-shaped and including skirt means, one of said first and second die means including means to displace a partially formed can end to a horizontal plane when said die means are spaced apart, said horizontal plane being vertically spaced from said feed path, kicker means for each said pair of tooling, said kicker means including kicker member means reciprocable in said horizontal plane when said die means are spaced apart to impact against a partially formed can end in said horizontal plane and propel said partially formed end in said plane, curling means for receiving said partially formed can end, and

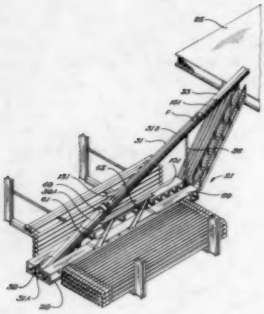
means between said pairs of tooling and said curling means to receive partially formed can ends propelled by said kicker member means and deliver said partially formed can ends to said curling means.

4,382,738

PIPE HANDLING SYSTEM

Robert Frias, Odessa, Tex., assignor to Ingram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 125,162, Feb. 27, 1980. This application Sep. 10, 1980, Ser. No. 185,726
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 14 Claims



1. An apparatus for transferring lengths of pipe laterally between a pipe handling apparatus having an elongated frame and a pipe rack located on one side of said elongated frame comprising:

a first arm and a second arm positioned in spaced relation on said one side of said frame next to said pipe rack, each said arm having first and second ends,

a connection means for pivotally connecting each said first end to said frame for pivotal movement about generally parallel first and second pivot axes lying in generally the same horizontal plane,

a pivoting means for pivoting said first arm about said first axis and said second arm about said second axis,

said pivoting means comprising a fluid actuated cylinder means,

said fluid actuated cylinder means comprising two cylinder means, each of said two cylinder means having first and second ends,

each said first cylinder means ends being pivotally coupled to said frame at a location below said connection means,

said second end of one of said cylinder means being pivotally coupled to said first arm at a first coupling point positioned between said first and second ends of said first arm and on a lower surface of said first arm,

said second end of the other of said cylinder means being pivotally coupled to said second arm at a second coupling point positioned between said first and second ends of said second arm on a lower surface of said second arm,

a trough means having a first end pivotally coupled to said second end of said first arm and a second end pivotally coupled to said second end of said second arm,

said trough means being capable of supporting a length of pipe,

said pivoting means causing said trough means to move in a substantially vertical manner, and

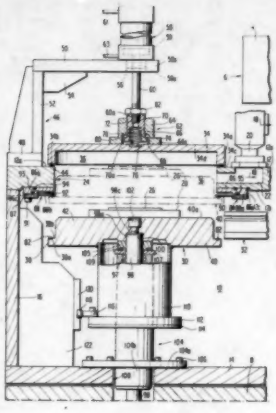
a tilting means for tilting said trough means laterally in opposite directions.

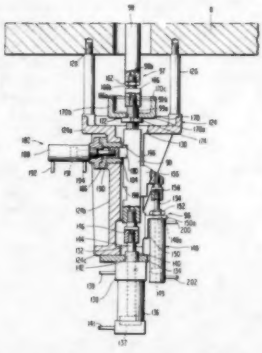
4,382,739

LIGHT ACTUATING FORCE ELEVATOR DRIVE MECHANISM

Alfred Mack, Poughkeepsie, and Brian C. O'Neill, Millbrook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,658
Int. Cl.³ H01J *37/20*
U.S. Cl. 414—217 10 Claims





1. In an electron beam writing system for beam writing on a work piece, said system including:

a vacuum chamber,

an elevator mechanism within said chamber to one side of the beam writing area, said mechanism including a workpiece bearing elevator platform and an elevator drive shaft assembly fixed to said platform and mounted to said chamber for vertically displacing said elevator platform within said chamber,

actuating means coupled to said shaft assembly for vertically raising and lowering said elevator drive shaft assembly and said platform carried thereby, between a first raised position and a second lowered position,

said vacuum chamber including wall means bearing a closable opening for permitting entry of workpieces into the vacuum chamber through said opening,

means for subjecting said elevator mechanism to system vacuum pressure when said chamber is sealed off such that said vacuum pressure within said vacuum chamber tends

to pull the elevator platform up, while when said wall opening means open, gravity effect on the elevator mechanism tends to pull said elevator platform downwardly within said vacuum chamber,

the improvement comprising:

load force counterbalancing means connected to said elevator drive shaft assembly for applying balancing forces for balancing out the vacuum pressure tending to pull the elevator platform up when the opening in the chamber wall means is sealed under chamber vacuum conditions and in the opposite direction to overcome the gravity force tending to pull the elevator platform down when said vacuum chamber is subjected to atmospheric pressure through said wall means opening, thereby placing said elevator mechanism in a condition of substantially zero mass under both vacuum chamber atmospheric and vacuum pressure conditions, thereby permitting rapid movement of said elevator platform by said elevator actuating means with minimal force and with minimal vibration and shock to said system during stoppage such that a first workpiece may be moved by the elevator mechanism while simultaneously electron beam writing may be effected on a second workpiece within said vacuum chamber, thereby increasing workpiece throughput.

4,382,740

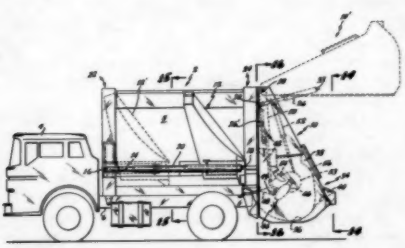
REFUSE COMPACTION APPARATUS AND METHOD

Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 876,644, Feb. 10, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,440

Int. Cl.³ B65F *3/20*

U.S. Cl. 414—293 **56 Claims**



41. In combination for storing refuse transferred from a hopper,

a plurality of thin sheet members made from a lightweight material and shaped to withstand forces in tension and disposed to define a pair of side walls and top and bottom walls of a storage body,

stiffening means disposed at the corners of the storage body defined by the thin sheet members,

a tailgate assembly operatively coupled to the storage body at one end of the storage body for pivotable movement cyclically between a first position adjacent to the storage body for providing for the transfer of refuse from the tailgate assembly to the storage body and a second position displaced from the storage body for providing for a removal of the refuse from the storage body,

means included in the tailgate assembly for providing a compaction and fragmentation at high forces of the refuse with the tailgate assembly in the first position and for the production of low pressures in the refuse after such compaction and fragmentation and for providing for a passage of the refuse at the low pessures into the storage body,

a first frame disposed on the storage body at the position of the tailgate assembly,

a second frame disposed on the storage body at the end of the storage body opposite to the tailgate assembly,

a truck frame connected only to the first and second frames to support the storage body and the tailgate assembly, and

means for controlling the magnitude of the high forces at which the refuse is compacted and fragmented.

4,382,741

STORAGE PLANT FOR OBJECTS, IN PARTICULAR FOR TRACK LINKS

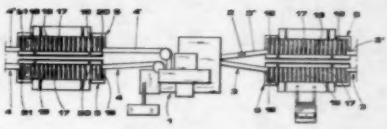
Alceste Lunardi, Rome; Mauro Villani, Bologna, and Walter Grilli, Modena, all of Italy, assignors to Italtractori.T.M. S.p.A., Modena, Italy

Filed Jun. 2, 1980, Ser. No. 155,835

Claims priority, application Italy, Sep. 14, 1979, 40103 A/79

Int. Cl.³ B65B *21/02*; B65D *87/00*

U.S. Cl. 414—403 **4 Claims**



1. A production line for producing objects comprising a plurality of consecutive processing centers interspersed with a plurality of storage means with each storage means positioned between a pair of consecutive processing centers, the production line further including a plurality of conventional roller conveyors interconnecting said processing centers and said storage means, each said storage means comprising a plurality of containers each accommodating said objects disposed in horizontal rows therein, each of said containers comprising a rectilinear surface upon which said objects rest, said rectilinear surface being defined by a pair of parallel greater borders and a perpendicular pair of parallel lesser borders, said surface being formed with a number of like rectilinear slots each parallel with the next and arrayed across substantially the total width of said surface so as to be disposed perpendicular with respect to said greater borders, said container comprising two parallel, symmetrically opposed and stationary lateral walls located at said greater borders and two symmetrically disposed and movable frontal walls located at said opposed lesser borders of said surface, said slots being adapted to receive at least a portion of the rollers of said conventional conveyors in such a way that said rollers protrude upwardly with respect to said rectilinear surface thereby creating an effectively movable surface upon which said objects may rest, said storage means comprising means to receive, hold and position each single full or empty container with respect to said conventional conveyors in order to allow both loading thereinto of objects withdrawn from a said conventional conveyor positioned upstream of said storage means and unloading and dispatching of objects contained therein on a further conventional conveyor downstream of said storage means, said storage means further comprising a roller conveyor connecting each said upstream conventional conveyor with each said downstream conventional conveyor, two short roller conveyors adjacent the ends of said roller conveyor and parallel thereto, the width of said two short conveyors being substantially equal to the interior width of one of said single containers, said short conveyors being disposed at substantially equal spaced distances slightly greater than that corresponding to the length of said rectilinear surface, a roller transfer conveyor having parallel rollers connecting the two short conveyors upon which a single container may be supported in such a way that said parallel rollers may enter corresponding single ones of said slots located in said rectilinear surface and protrude upwardly with respect thereto, said storage means further including at least one means for effecting lateral transfer of said objects from said roller conveyor to and from said short roller conveyors, thus dispos-

ing the objects into rows so as to form 'parcels' of said objects on said short roller conveyors; at least one corresponding withdrawal device for effecting lateral transfer of the said objects, separated singly from a respective 'parcel' lying on a said short conveyor, from said short conveyor back onto said roller conveyor, and said single empty or full containers being capable of being taken from and introduced into said storage means without any hindrance to the normal operation of said production line.

4,382,742

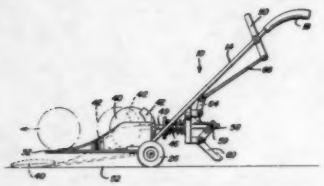
ATHLETIC DISCUS RETRIEVER

Ralph O. Mouton, 705 Jefferson St., Lafayette, La. 70502

Filed Sep. 17, 1981, Ser. No. 303,110

Int. Cl.³ B60P *1/36*

U.S. Cl. 414—439 **13 Claims**



1. An athletic discus retriever including an inclined set of support members having a wheel at one end of each member and a set of handles at the other end of each member, a work surface extending between the wheels and fixedly secured in place by the inclined set of support members, means mounted upon the work surface guiding a discus from a retrieved flat laying position rearwardly upon the work surface as the retriever is tilted rearwardly, so that the discus is guided to a vertical position resting upon its edge, and spring means having a discus engaging means for projecting upon release of the discus from its edge resting position.

4,382,743

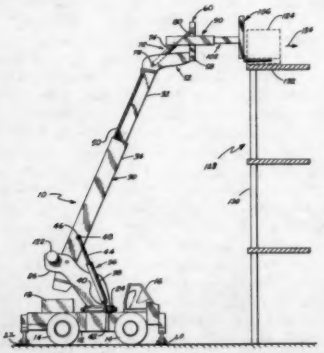
LOADING APPARATUS WITH A TILTABLE AND EXTENDABLE FORK CARRIAGE MOUNTED THEREON

Lawrence H. Newell, 644 S. 215th St., Elkhorn, Nebr. 68022

Filed Feb. 23, 1981, Ser. No. 236,990

Int. Cl.³ E02F *3/72*

U.S. Cl. 414—692 **21 Claims**



21. Loading apparatus comprising a mobile chassis, a pair of standards extending in an upright direction from said chassis, a horizontal shaft extending between said standards to provide a first pivotal axis, a telescopic boom assembly mounted adjacent one end thereof to said shaft for pivotal movement about said axis, a boom head fixedly attached to the free or other end of said boom assembly, a carriage head pivotally mounted on said boom head, a fork carriage, and means reciprocably mounting said fork carriage to said carriage head so that said fork carriage can be extended and retracted with respect to said boom assembly.

4,382,744

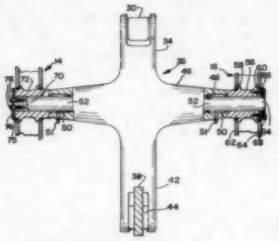
LOADER BELLCRANK MOUNTING MEANS

John E. Klem, Waukegan; Ezzat A. Hammoud, Libertyville, and Daniel E. Nelson, Wildwood, all of Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 23, 1981, Ser. No. 246,462

Int. Cl.³ E02F *3/00*

U.S. Cl. 414—712 **2 Claims**



1. Apparatus for pivotally mounting a bellcrank to a loader linkage comprising:

a pair of parallelly disposed box-beam loader boom arms having a substantially fixed relative position, each having inner and outer side plates;

a pair of castings secured respectively between the side plates of each boom arm, each casting having a bore axially aligned with the bore in the other casting;

a bellcrank member having a central bore and extending between said boom arms;

a nonrotatable pivot shaft extending through said bellcrank bore and through said casting bores to the outer sides of both boom arms;

a first plate secured to a first end of said shaft adjacent the outer side of one boom arm, said first plate also being bolted to the casting thereat; and

a second plate bolted to the second end of said shaft externally of the other boom arm, said second plate having a diameter larger than said shaft and being independent of said other boom arm such that the transmission of torsional loading between said one boom arm and said other boom arm through said shaft is prevented.

4,382,745

METHOD OF CONTROLLING WICKET GATES OF A PUMP-TURBINE

Takao Kuwabara, and Hiroshi Okumura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 908,202, May 22, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,374

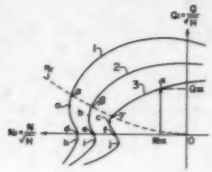
Claims priority, application Japan, May 20, 1977, 52-59213; May 20, 1977, 52-59214; Oct. 14, 1977, 52-122449

Int. Cl.³ F03B *3/10, 15/02*

U.S. Cl. 415—1 **124 Claims**

1. In a method of controlling wicket gates of a pump-turbine upon removal of load from said pump-turbine, said pump-turbine being of the type having in the turbine operation area S-section where discharge per unit head (Q_1) and speed per unit head (N_1) satisfy the relationship, $\partial Q_1/\partial N_1 > 0$, the improvement which comprises the steps of slowly closing said wicket gates when the ratio ($\partial Q_1/\partial N_1$) of variation of the

discharge per unit head to the speed per unit head is reduced than a predetermined negative value, continuing the slow closure of said wicket gates while said pump-turbine operates



tracing said S-section, and rapidly closing said wicket gates as soon as the ratio, $\partial Q_1/\partial N_1$, is once reversed from a positive value out of said S-section to a negative value.

4,382,746

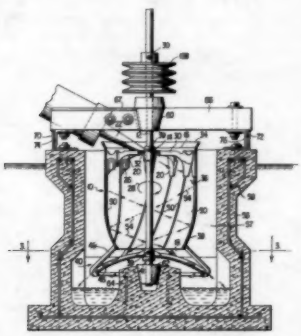
VORTEX TURBINE APPARATUS

Philip Retz, 1783 Lanier Pl., NW., Washington, D.C. 20009

Filed May 20, 1981, Ser. No. 265,546

Int. Cl.³ F03B *1/02, 5/00*

U.S. Cl. 415—202 **40 Claims**



12. A fluid-driven turbine apparatus, comprising:

substantially cylindrical rotatable container means, having:

an opening at a bottom portion of said container means,

vortex-inducing means for inducing a vortex in said fluid as it flows generally downwardly from a position spaced from said bottom portion and exits said container means via said opening at its bottom, and

vortex-reacting means for reacting to said vortex by applying a rotary force to said container means;

power output means connected to said container means for providing power to external receptors in response to rotation of said container means by said vortex; and

injecting means for injecting said fluid into said container means;

wherein said vortex-reacting means includes injection-reacting means located on the interior walls of said container means and presenting reacting surfaces to said injecting means for providing said rotary force to said container means in reaction to said injected fluid impinging on said injection-reacting means.

4,382,747

COMPRESSOR OF A TURBOCHARGER

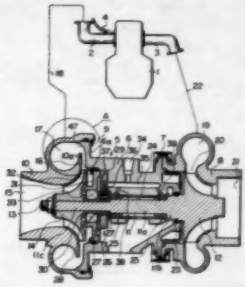
Hiroshi Okano, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1980, Ser. No. 168,314

Claims priority, application Japan, Apr. 1, 1980, 55-41143

Int. Cl.³ F01D *1/02;* **F04D** *29/44, 29/46*

U.S. Cl. 415—207 **9 Claims**



1. A turbocharger comprising a center housing, a compressor housing fixed onto the center housing, an impeller arranged in the compressor housing, a scroll shaped air discharge chamber formed in the compressor housing around the impeller and having an inner wall defining the air discharge chamber therein, the inner wall of the air discharge chamber having a cylindrically axially extending inner wall portion which is positioned furthest from the impeller, and a radially extending vaneless diffuser arranged between the impeller and the air discharge chamber, the center housing having a first annular surface which radially extends from the vicinity of the impeller to said inner wall portion of the air discharge chamber, the compressor housing having a radially extending annular separating portion which separates the vaneless diffuser from the air discharge chamber, the annular separating portion having a second annular surface which is arranged parallel to the first annular surface and extends from the vicinity of the impeller to the vicinity of said inner wall portion of the air discharge chamber, the first annular surface and the second annular surface defining the vaneless diffuser therebetween, the first annular surface of the center housing having a concavely curved portion at a position near said inner wall portion of the air discharge chamber, the concavely curved portion gradually curving from the first annular surface towards said inner wall portion of the air discharge chamber, the center housing having a flange portion having the concavely curved portion and a cylindrically extending outer circumferential wall, said inner wall portion of the air discharge chamber having a cylindrically extending inner circumferential wall which is fitted onto the outer circumferential wall of the center housing.

4,382,748

OPPOSED PISTON TYPE FREE PISTON ENGINE PUMP UNIT

Robert D. Vanderlaan, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

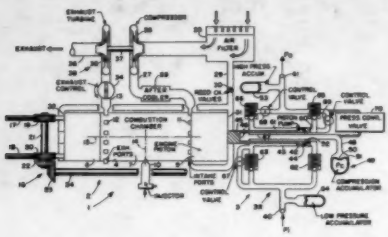
Filed Nov. 3, 1980, Ser. No. 203,813

Int. Cl.³ F04B *35/00*

U.S. Cl. 417—11 **51 Claims**

1. A free piston engine pump system comprising free piston engine means for producing output work, pump means responsive to such output work for producing a hydraulic output, said pump means comprising a pump cylinder, a pump piston

movable in said pump cylinder, and reset means for resetting said pump piston to a predetermined position in said pump



cylinder, said reset means comprising a fluid pressure intensifier.

4,382,749

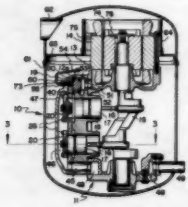
RECIPROCATING COMPRESSOR WITH INTEGRAL UNLOADER VALVE

Arlo F. Teegarden, and Jerome C. Roach, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Nov. 14, 1980, Ser. No. 206,750

Int. Cl.³ F04B *49/02, 35/04*

U.S. Cl. 417—295 **12 Claims**



1. A reciprocating compressor comprising

a. a casing defining a plurality of cylinder banks, each including a discharge passage and a plurality of cylinders in which a fluid may be compressed by the reciprocating motion of pistons;

b. a valve assembly adjacent to one end of each cylinder, said valve assembly including a suction valve and a discharge valve;

c. suction gas passages formed within each cylinder bank, generally circumjacent the cylinders, in fluid communication with the suction valves;

d. a discharge gas chamber overlying the valve assemblies of each cylinder bank, in fluid communication with the discharge valves of each cylinder in the bank and with the discharge passage through which fluid compressed in the cylinders is discharged, each discharge passage having an axial center in parallel alignment with the axial centers of the cylinders disposed in its cylinder bank; and

e. an unloading valve for controlling fluid flow into the suction gas passages of all the cylinders in at least one of the cylinder banks, said unloading valve including an unloader chamber and an unloader port, both disposed within the cylinder bank as an integral part thereof, and an unloader piston that is movable within said unloader chamber, to seal the unloader port to control fluid flow through the unloading valve, said unloader chamber having an axial center in parallel alignment with the axial center of all the cylinders disposed in the same cylinder bank as the unloading valve.

4,382,750

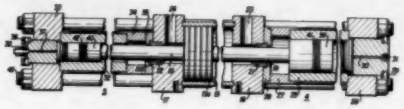
HIGH PRESSURE FLUID PUMP

Walter W. Robertson, and Walter W. Robertson, Jr., both of Cranesville, Pa., assignors to Hydro-Psc, Inc., Fairview, Pa.

Filed Dec. 22, 1980, Ser. No. 219,256

Int. Cl.³ F04B *35/00*

U.S. Cl. 417—397 **6 Claims**



1. A compressor comprising a cylinder having a head at one end and a seal at the other end, a piston rod having one end extending into the cylinder through said seal, means for reciprocating the rod toward and away from the head, a free piston in the cylinder not connected to the rod but in position to be engaged by the rod, a port through the head for fluid under pressure, and means for connecting said port to a fluid inlet under positive pressure when said piston rod is moving away from the head so the said pressure forces the piston to move with the piston rod as the cylinder is filled with said fluid and for connecting said port to a high pressure outlet when said piston rod is moving back toward said head.

4,382,751

FUEL PUMPING APPARATUS

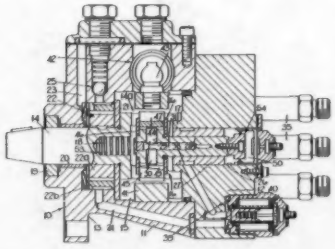
James C. Potter, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 6, 1981, Ser. No. 232,189

Claims priority, application United Kingdom, Feb. 14, 1980, 8004955

Int. Cl.³ F04B *19/00*

U.S. Cl. 417—462 **2 Claims**



1. A fuel pumping apparatus comprising a body part, a rotary distributor member located in the body part and adapted to be driven, in use, in timed relationship with the associated engine, a pumping plunger mounted in a transverse bore in the distributor member, a cam ring surrounding the distributor member and having angularly spaced cam lobes for imparting inward movement to the pumping plunger as the distributor member rotates, fluid pressure operable means for adjusting the setting of said cam ring whereby the timing of delivery of fuel can be varied, passage means for conveying fuel to and from the injection pump, a chamber defined at one end of the distributor member to which liquid is admitted to effect axial movement of the distributor member to vary an operating characteristic of the apparatus, means for varying the amount of liquid supplied to said chamber, said means comprising a flow passage for conveying liquid to said chamber, a valve in said flow passage comprising cooperating recesses and a port formed on the distributor member and body part, said body part being provided with a further port for registra-

tion in turn with said recesses, said further port being connected to a drain, flow restricting means for controlling flow through said further port whereby liquid can escape from said chamber at a restricted rate, said ports being brought into registration with a pair of said recesses respectively at the same time, said valve being operable to open and close said flow passage, said valve being operated upon rotation of the distributor member, means for determining when said valve is open, and an on/off valve located in said flow passage and operable while the valve is open to permit flow of liquid through the flow passage.

4,382,752

TWIN-CYLINDER PUMP, IN PARTICULAR FOR PUMPING THICK LIQUIDS

Karl Schlecht, Hainbuchenweg 47, D-7000 Stuttgart 70, Fed. Rep. of Germany

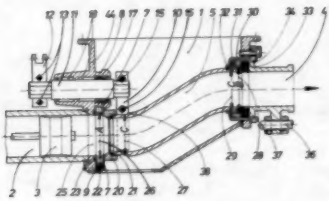
PCT No. PCT/DE80/00011, § 371 Date Oct. 1, 1980, § 102(e) Date Sep. 25, 1980, PCT Pub. No. WO80/01594, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 31, 1980, Ser. No. 209,465

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903749

Int. Cl.³ F04B *15/02*

U.S. Cl. 417—516 **12 Claims**



1. A piston pump particularly intended for the delivery of viscous substances such as concrete, comprising a hopper having a rear wall and an opposite front wall, two feed cylinders disposed in laterally spaced parallel relation and opening through said rear wall into said hopper, a delivery pipe in communication with said hopper through said front wall thereof, an S-shaped swivel tube located within said hopper and having an inlet end and an outlet end with said outlet end opening into said delivery pipe and said inlet end being swivelably movable alternately between said feed cylinders, a bearing bush surrounding the outlet end of said swivel tube and fixed thereto, a wear ring positioned in sealed contact with said inlet end of said swivel tube and arranged in sliding contact with said rear wall, the outside diameter of said bearing bush is larger than the effective sealing diameter of said wear ring at the inlet end of said swivel tube in contact with said rear wall, and a resilient element located between the outlet end of said swivel tube and said delivery pipe, a pressure sleeve laterally encircling said resilient element, and said resilient element is exposed to the conveying pressure acting in said swivel tube.

4,382,753

NONPULSATING IV PUMP AND DISPOSABLE PUMP CHAMBER

G. Kent Archibald, St. Paul, Minn., assignor to AVI, Inc., St. Paul, Minn.

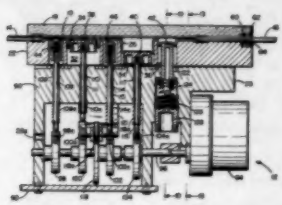
Division of Ser. No. 19,223, Mar. 9, 1979, Pat. No. 4,236,880. This application Sep. 10, 1980, Ser. No. 185,769

Int. Cl.³ F04B *43/08, 21/00*

U.S. Cl. 417—479 **8 Claims**

1. For use in a pump having a pump housing, a first cylinder in the housing, a first piston movable in the first cylinder, first valve means for controlling fluid flow, and drive means for driving the first piston, an integral disposable pump chamber comprising:

an inlet, an outlet, a sealed main fluid flow passage between the inlet and outlet, the main fluid flow passage including a sealed first rolling diaphragm pumping chamber which



is positioned in the first cylinder when the disposable pump chamber is positioned in the pump housing; wherein fluid is pumped from the inlet to the outlet without contacting the pump housing, the first cylinder, the first piston, the first valve means or the drive means.

4,382,754

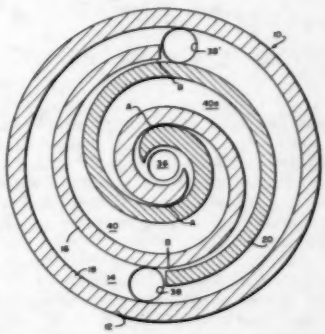
SCROLL-TYPE, POSITIVE FLUID DISPLACEMENT APPARATUS WITH DIVERSE CLEARANCES BETWEEN SCROLL ELEMENTS

Robert W. Shaffer, and Jan R. Acker, both of Campbellsville, Ky., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 20, 1980, Ser. No. 208,498

Int. Cl.³ F01C *1/02*

U.S. Cl. 418—55 **9 Claims**



1. An improved, scroll-type, positive fluid displacement apparatus, having means defining a curved and walled, fluid-working chamber, said chamber having a radial center and an outer peripheral area circumscribing said center, a pair of scroll-shaped, fluid-working elements within said chamber and extending from an adjacency to said radial center into said peripheral area, a first port opening into, and substantially centrally of, said chamber, a second port opening into said chamber radially outwardly-spaced from said first port, and means mounting at least one of said scroll-shaped, fluid-working elements for movement of the latter in an orbit, within said chamber, relative to, and inter-fittingly with, the other of said elements, to effect moving and close, substantially sealing, minimum clearances, between said elements, which define inter-element, walled, variable-volume pockets which, during orbit of said one element, close off, and move progressively and circularly, from one of said ports toward the second of said ports for opening of said pockets onto, and for communication

of said pockets with, said second port, wherein the improvement is comprised by:

said elements having prescribed configurations which cooperate with said mounting means to cause said minimum clearances, between said elements, to be of a given clearance therebetween in said peripheral area of said chamber, of a clearance other than said given clearance in adjacency to said radial center, and of a family of clearances, which differ from said given and other clearances, intermediate said given and other clearances.

4,382,755

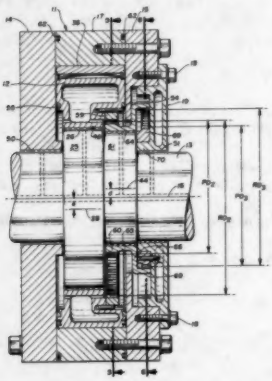
DRIVESHAFT ARRANGEMENT FOR TROCHOIDAL ROTARY DEVICE

Ralph M. Hoffmann, Eden Prairie, Minn., assignor to Trochoid Power Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 146,658, May 5, 1980, abandoned. This application Dec. 11, 1981, Ser. No. 254,760

Int. Cl.³ F01C *1/22*

U.S. Cl. 418—61 A **5 Claims**



1. In an inner envelope trochoidal rotary device having a housing defining a trochoidal cavity symmetrical about a first axis, a shaft disposed in said housing for rotation about said first axis, a rotor eccentric connected to said shaft having a second axis parallel to said first axis and spaced therefrom by a distance e, a rotor symmetric about said second axis and disposed on said rotor eccentric for planetating movement in said cavity as said shaft rotates, and a gear ring of pitch diameter A coaxial with said rotor and connected thereto, apparatus cooperating with said gear ring to control movement of said rotor relative to said shaft and enable the diameter of said shaft to be adequately sized to handle torque loads imposed thereon, comprising: a further eccentric connected to said shaft having a third axis parallel to said first axis and spaced therefrom by a distance d, said third axis being 180° from said second axis relative to said first axis and the diameter of said further eccentric being different from that of said rotor eccentric, a gear wheel supported for rotation on said further eccentric having adjacent first and second gears of respective pitch diameters B and C concentric about said third axis, said first gear engaging said gear ring, and a fixed final gear of a pitch diameter D disposed about said shaft concentric with said first axis for engaging said second gear, wherein said values e, d, A, B, C, and D are defined by:

$$d = \frac{A - B - 2e}{2}$$

$D = C - 2d$, and

-continued

$$C = \frac{(B - A + 2e) \times 3B}{2A - 3B}$$

4,382,756

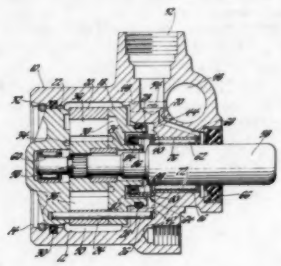
BEARING AND SEAL ASSEMBLY FOR A HYDRAULIC PUMP

Thomas G. Chronowski, Flint, and Paul O. Wendler, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1981, Ser. No. 271,659

Int. Cl.³ F04C *2/00, 15/00*

U.S. Cl. 418—133 **2 Claims**



1. In combination, a high pressure hydraulic pump and a bearing and seal assembly comprising, a stationary pump housing, a nonrotatable pressure plate, a rotatable drive shaft, a bearing case having a stepped diameter outer cylindrical surface with a shoulder area between said stepped diameters providing a locating surface to position the bearing case in said stationary pump housing with the smaller stepped diameter being radially supported in the stationary housing, roller bearing means disposed in said bearing case radially inward of the smaller stepped diameter for rotatably supporting the drive shaft, seal means secured in and sealingly engaging said bearing case radially inward of the larger stepped diameter for sealingly engaging the pressure plate for preventing leakage of the high pressure hydraulic fluid adjacent said pressure plate from the interior of the pump housing, and annular end surfaces on said bearing case and seal means subjected to high pressure adjacent said pressure plate whereby said shoulder area is pressure loaded into abutment with said pump housing.

4,382,757

MOLDING APPARATUS FOR EXPANDING BEADS OF POLYSTYRENE MATERIAL

Richard N. Roy, Waterloo; Clerval Labbe, and Albert Korman, both of Mansonville, all of Canada, assignors to Mansonville Plastics Limited, Quebec, Canada

Filed Apr. 1, 1981, Ser. No. 249,954

Int. Cl.³ B29D *27/00*

U.S. Cl. 425—4 R **12 Claims**

1. In an apparatus for molding large blocks of expanded thermoplastic material, said apparatus comprising:

a plurality of walls that together form a mold defining a mold cavity, at least some of said walls being hollow and having interiors connected to the mold cavity by means of a plurality of openings,

means for filling up said mold cavity with beads of material to be molded, and

means for supplying steam to the interiors of said hollow walls and from within said hollow walls through the openings into the mold cavity, to heat said beads of mate-

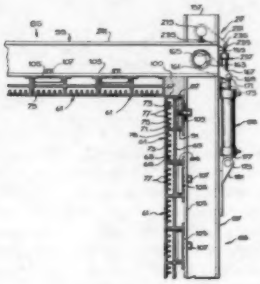
rial to be molded and cause them to expand and coalesce, wherein:

each of said hollow walls comprises a plurality of elongated, tubular wall members each having inner and outer walls, said wall members being arranged side-by-side with their inner walls aligned to form together the mold defining the mold cavity,

said means for supplying steam comprises means for distributing said steam into each of said tubular wall members,

each of said wall members has a plurality of fins extending along, and projecting inwardly from its inner wall to stiffen said inner wall, to improve heat transfer and to create a plurality of independent sub-chambers in which any condensate may be trapped, said wall openings being located between some of said fins to distribute in turn the steam from within said member into the molding cavity,

each of said wall members also has means projecting from its outer wall for transversely mounting it onto spaced apart frames which permanently encircle the mold,



each of said frames comprises at least two frame members and means for movably connecting said frame members together so that said frame members may slightly move away from a molding position where the wall members mounted onto said frame members together form the mold, to a block removing position where part of said wall members separate from the molded block to facilitate its removal from the mold, and vice versa, and

said means for filling up the molding cavity with beads of material to be molded comprises:

duct means for directing said beads of material to be molded from a storage area to at least two spaced-apart inlets in one of the walls of said mold,

blower means in the duct means for moving the beads from said storage area to the molding cavity, and

means for closing each inlet after the mold cavity has been filled up with beads.

4,382,758

APPARATUS FOR MANUFACTURING CELLULOSIC FIBROUS MATERIAL WHICH CAN BE PRESSED INTO MOLDED PARTS

Herbert Nopper, Kuppenheim, and Wolfgang Knoch, Gernsbach, both of Fed. Rep. of Germany, assignors to Casimir Kast GmbH & Co. KG, Gernsbach, Fed. Rep. of Germany

Division of Ser. No. 85,763, Oct. 17, 1979, Pat. No. 4,290,988. This application May 18, 1981, Ser. No. 264,656

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845112

Int. Cl.³ B29C *13/00*

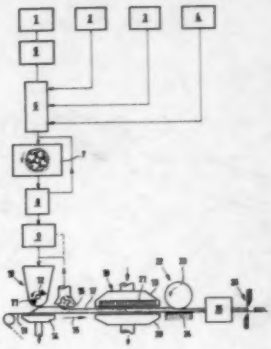
U.S. Cl. 425—82.1 **4 Claims**

1. An apparatus for manufacturing a dry-shaped cellulosic fibrous transportable mat suitable for future compressing into a molded article, comprising:

(a) a pre-pulverizing apparatus for cutting and forming cellulosic waste material in dry form into pre-pulverized material,

(b) a mixing chamber and grinder for mixing said pre-pulverized material with a bonding material in dry form comprised of at least one thermoplastic bonding agent and one thermosetting bonding agent,

(c) a forming head for receiving said mixture from said chamber and for dispensing the mixture as a layer upon a moving carrier,



(d) a heating means for plasticizing the thermoplastic bonding agent in said layer without setting of the thermosetting bonding agent therein,

(e) a pressure roller for compacting and bonding the layer into a transportable mat,

(f) a cooling means for cooling said transportable mat, and

(g) a cutter for cutting said transportable mat to select sizes.

4,382,759

ELEMENT FOR THE INSULATION OF THE OUTER WALL OF A BUILDING, AND PROCESS AND APPARATUS FOR ITS MANUFACTURE

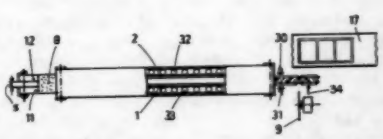
Elio Vassalli, 6852 Genestrerio, Switzerland

Division of Ser. No. 221,638, Dec. 31, 1980. This application Jan. 1, 1981, Ser. No. 269,410

Claims priority, application Switzerland, Dec. 31, 1979, 11484/79; Nov. 19, 1980, 8545/80

Int. Cl.³ B29D *27/04*

U.S. Cl. 425—115 **1 Claim**



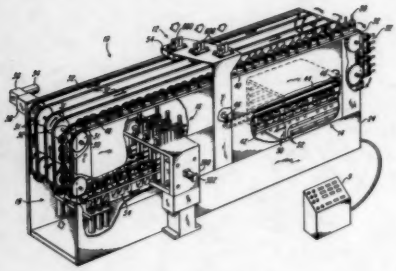
1. Apparatus for the production of insulating elements, comprising two superposed conveyor belts adapted to hold two uninterrupted slabs of width equal to that of the elements to be produced and resting on edge on the lower conveyor belt at a spacing from each other corresponding to the thickness of the insulating elements to be produced; means to inject an expansible insulation between the slabs; pressure rollers on the outer sides of the two slabs to resist the pressure due to the expansion of the insulation between the two conveyor belts; two opposed grinders at the discharge of the two conveyor belts to grind two opposite vertical channels in said two slabs; and a cutting disk to cut the insulation along the midplane of each said channel.

4,382,760

APPARATUS FOR HIGH RATE PRODUCTION OF BIAXIALLY ORIENTED THERMOPLASTIC ARTICLES

James G. Wiatt; James W. Calvert; Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 24, 1981, Ser. No. 257,468
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—139 14 Claims



1. Apparatus for high rate production of biaxially oriented articles from thermoplastic article preforms, each preform having a formable portion and a neck portion, the apparatus biaxially expanding the formable portion when its temperature is at or near the molecular orientation temperature of the thermoplastic, the apparatus comprising:

(a) a machine frame;

(b) article carriers for retaining articles by neck portions thereof, each carrier comprising a plurality of cylindrical chucks with passages therethrough, and each chuck retaining one article;

(c) a load station for loading a plurality of carriers with a plurality of article preforms, the load station being supported by the machine frame;

(d) a blow molding station for biaxially expanding article preforms into finished articles, the blow molding station being supported by the machine frame and comprising a plurality of sets of mating mold sections, actuating means for opening and closing the mold sections, and mold pressurizing means for introducing pressurized fluid into the closed mold sections, the mold sections and pressurizing means being arranged to cooperate with a plurality of carriers and chucks therein to simultaneously effect expansion of preforms retained thereby;

(e) an ejection station supported by the machine frame for effecting the release of articles from the carriers; and

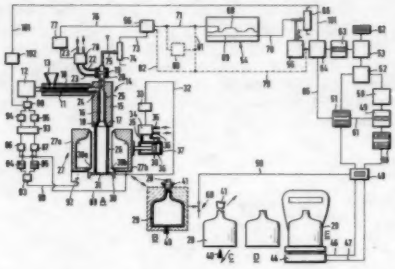
(f) conveyor means supported by the machine frame for suspending and transporting the carriers to and from the load station, the blow molding station, and the eject station, the conveyor means defining a plurality of closed paths, pairs of closed paths further defining a plurality of parallel lanes within which the carriers are transported, the carriers and chucks within each lane defining columns of articles and preforms, and the carriers and chucks of adjacent lanes defining rows of articles and preforms, each station function being performed simultaneously on a matrix defined by the rows and columns.

4,382,761

CONTROLLING AN EXTRUSION BLOWING PROCESS

Werner Daubenbüchel, Bergisch-Gladbach, and Dieter Hess, Swisttal-Morehoven, both of Fed. Rep. of Germany, assignors to Krupp-Kautex Maschinenbau GmbH, Bonn, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,963
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940418
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—140 18 Claims



1. Apparatus for maintaining substantially constant the final weight of a hollow member which is made from a thermoplastic material by an extrusion blowing process wherein a preform is continuously extruded through a discharge opening of an extrusion pressing head connected to an extrusion press and blown in a mold means, comprising means for determining the final weight of a said hollow member after leaving the mold means and comparing said final weight to a reference value representing desired weight, means for increasing or decreasing the size of said discharge opening in response to the comparison operation such that the volume and therefore the weight of the preform increases when said final weight is less than said reference value and decreases when said final weight is greater than said reference value, means for detecting when the length of the preform has reached a preselected length, said detecting means being operable to initiate closure of the mold means about the preform, and control means for maintaining substantially constant the time to extrude said preform to said preselected length.

4,382,762

THERMOFORMING APPARATUS AND METHOD

Frank Schepp, Huntington, Conn., assignor to R & G Mold Company Inc., Milford, Conn.

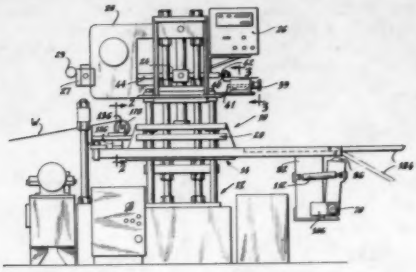
Filed Oct. 19, 1981, Ser. No. 312,227
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—142 8 Claims

1. In an apparatus for forming thermoplastic sheet material comprising a forming mold, a heater platen, cutter blade means carried by said mold having a continuous outline shape defining the peripheral outline of the article to be formed therein, drive means for bringing said mold and platen into and out of closed relation with a thermoplastic sheet between them, said thermoplastic sheet spanning the cutter blade means and having a margin entirely surrounding said cutter blade means, and means for applying differential air pressures to said sheet to successively hold it in contact with said heater platen and to form it in a heated plastic state into conformity with said mold, the improvement comprising:

solid state sensor means for sensing when the closed relation of said mold and platen is such that said thermoplastic sheet is clamped between said platen and said blade means without full penetration of said sheet by said blade means,

electronic control means responsive to said sensor means for

causing the closed relation sensed by said sensor means to be maintained during the formation of an article, and



sensor override means for causing said mold and platen to close beyond the point sensed by said sensor means, permitting said blade means to fully penetrate said sheet along the perimeter of the article formed therein.

4,382,763

SAFETY COVER FOR INJECTION MOLDING MACHINE

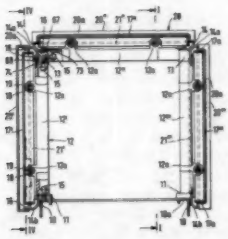
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,225

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029629

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—153 **16 Claims**



1. A safety cover assembly enclosing the area of the injection molding die of the die closing unit of a plastic injection molding machine having at least one safety gate which is retractable in the direction of the die opening movements and having a supporting member carrying and guiding the safety gate, including guide means for the safety gate comprising outer guide members (eyes or rollers) and inner guide members in the form of guide rods, as well as safety interlock triggering elements on the safety gate cooperating with electrical and hydraulic safety interlock devices which are arranged solidary with the die closing unit, as part of a system of safety controls for the die closing unit,

characterized in that

the supporting member carrying the safety gate (**17**,**17**″,**17**‴) is in the form of a supporting frame (**12**) which extends over the die closing unit in a portal-like fashion, being mounted on the machine base (**10**) and carrying stationary guide members as well as safety interlock devices (**33** . . . **39**; **48** . . . **50**; **40** . . . **47**) for the safety gate.

4,382,764

CONTACT LEDGE FOR SAFETY GATE OF INJECTION MOLDING MACHINE

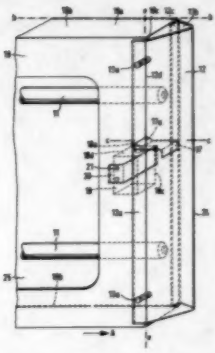
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,008

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1980, 3031499

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—153 **10 Claims**



1. In a production machine such as, for example, an injection molding machine, as part of a safety gate which is movable between open and closed positions by means of a safety gate drive, a safety mechanism for the interruption of the closing movement of the safety gate, in response to the presence in the path of the safety gate of an object or obstacle, the safety mechanism comprising in combination:

a straight leading edge on the safety gate extending transversely to the direction of movement of the safety gate;

a contact ledge extending parallel to the leading edge of the safety gate and ahead of the latter, the contact ledge being attached to the safety gate by means of a pivot connection with a pivot axis which is likewise parallel to the leading edge of the safety gate;

means for biasing the pivotable contact ledge forwardly away from the leading edge of the safety gate into a rest position in which an obstacle in the path of the closing safety gate causes the contact ledge to pivot rearwardly towards said leading edge, in opposition to the contact ledge biasing means; and

means for switching an electrical circuit of the safety gate drive in response to a rearward pivoting movement of the contact ledge.

4,382,765

METHOD OF MOISTURIZING THE SKIN WITH CARBAMIDE ACID ESTERS

Hinrich Möller; Rainer Osberghaus, and Manfred Budnowski, all of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 873,220, Jan. 30, 1978, abandoned. This application Nov. 14, 1980, Ser. No. 206,974

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704904

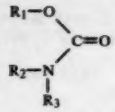
Int. Cl.³ A61K *7/42, 7/15, 47/00*

U.S. Cl. 424—365 **13 Claims**

1. In a method for keeping the skin of a warm-blooded animal moist comprising topically applying to the skin an effective moisturizing amount of a cosmetic composition,

wherein the improvement comprises the cosmetic composition containing from 1 to 20 percent by weight, based

upon the weight of the total cosmetic composition, of at least one skin moisturizing compound having the formula



wherein R_1 is a member selected from the group consisting of alkyl having 1 to 4 carbon atoms, alkylol having 2 to 4 carbon atoms, and alkyldiol having 3 to 4 carbon atoms, R_2 is a hydroxyalkyl having 2 to 6 carbon atoms and having 1 to 5 hydroxyl groups, and R_3 is a member selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, and hydroxyalkyl having 2 to 4 carbon atoms.

4,382,766

APPARATUS FOR CONTROLLING WALL THICKNESS IN EXTRUDED TUBULAR SYNTHETIC RESIN BLANK

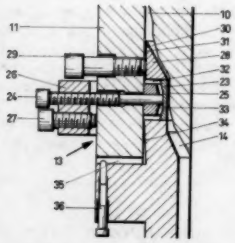
Harald Feuerherm, Alfred-Delp-Str. 1, 5210 Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 90,442, Nov. 1, 1979, Pat. No. 4,279,857, which is a continuation of Ser. No. 854,748, Nov. 25, 1977, abandoned. This application Jul. 20, 1981, Ser. No. 285,138

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2654001

Int. Cl.³ B29D *23/04*

U.S. Cl. 425—465 **10 Claims**



1. A shaping nozzle for making a tubular synthetic resin blank for blow molding, said nozzle comprising a core member defining an axis; an outer member surrounding said core member and defining therewith an annular passage centered on said axis, having a predetermined generally uniform radial dimension and having an annular axial outlet opening; inlet means on one of said members connected to said passage for receiving a solid strand and converting same into a tubular strand in said passage; an adjustment element in said passage between said members and defining therein a region of variable radial dimensions different from said predetermined radial dimensions, said adjustment element being an axially elongated flexible ring; and a plurality of means for radially displacing individual portions of said flexible ring.

4,382,767

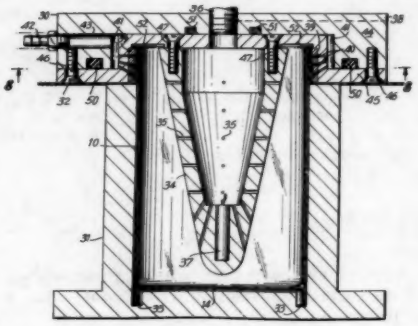
APPARATUS FOR MAKING CONTAINER FOR STORING FOOD

George H. Naugle, Central Valley; Robert L. Gordon, Monroe, and Richard J. Pines, Middletown, all of N.Y., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 906,275, May 15, 1978, Pat. No. 4,225,053. This application Jul. 21, 1980, Ser. No. 170,582

Int. Cl.³ B29C *17/04, 27/16*

U.S. Cl. 425—504 **14 Claims**



1. An apparatus for drawing and blow forming plastic into a paperboard outer container and vacuum forming plastic screw threads about the upper portion of said outer container comprising:

(a) a female mold, said female mold comprising at least one vertical wall and a bottom wall;

(b) a male mandrel comprising:

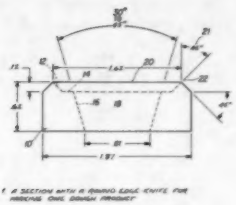
(i) a drawing and blow forming member positionable within said female mold, said drawing and blow forming member provided with holes in communication with a source of gas whereby gas may be directed from the interior of said drawing and blow forming member into the interior of said female mold, said female mold and drawing and blow forming member being arranged and constructed so that a sheet of plastic may be drawn by said drawing and blow forming member into said female mold and thereafter blow formed in said female mold;

(ii) screw thread forming means, including an annular screw thread forming surface spaced from and surrounding the upper portion of said member so as to be positioned adjacent an end of said female mold when said member is positioned within said female mold, said screw thread forming means including means providing communication between said surface and a source of vacuum, said screw thread forming means being arranged and constructed so that plastic screw threads may be formed about the upper outside portion of a paperboard outer container positioned in said female mold so that the upper portion of the outer container extends outside the female mold, said plastic screw threads being formed from plastic extending around the upper edge of said paperboard outer container and in close proximity about the outside of said upper portion of the outer container.

4,382,768
APPARATUS FOR MAKING DOUGH ENVELOPES CONTAINING FILLING

Igor Lifshitz, 1635 N. Martel, #316, Los Angeles, Calif. 90046, and Mikhail Kirakuperman, 7538 Irvine, North Hollywood, Calif. 91605

Continuation-in-part of Ser. No. 965,521, Dec. 1, 1978. This application Oct. 27, 1980, Ser. No. 201,224
Int. Cl.³ A23L *1/16*; B29C *1/00*
U.S. Cl. 425—510 16 Claims



1. An apparatus for forming regular dough envelopes containing filling comprising:

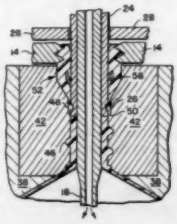
a frame having a plurality of through dough-forming mold openings, each of said mold openings being in the form of a frustoconical chamber, the included angle of walls defining said frustoconical chamber being between about 20 degrees and 60 degrees;

said frame having means for securing the edges of said dough products together, including generally horizontally extending pasting surfaces within each of said mold openings said chamber being of continuously reduced cross-section except for said pasting surfaces; and said frame further having means for cutting said dough envelopes apart, including sharp cutting ridges extending upwardly around said mold openings, said ridges terminating in cutting edges extending around each of said openings, said ridges being straight or curved and being being triangular in cross-section, with the included angle from said cutting edges being of the order of from about 60 degrees to 120 degrees, and said ridges being about $\frac{1}{8}$ of and inch in height above said pasting surfaces.

4,382,769
CONTAINER FORMING APPARATUS

Harry A. Younkin, Newark, Del.; Gottfried Mehnert, Berlin, and Uwe V. Roos, Bodenteich-Uelzen, both of Fed. Rep. of Germany, assignors to Hercules Incorporated, Wilmington, Del.

Filed Mar. 31, 1981, Ser. No. 249,723
Int. Cl.³ B29C *17/07, 17/10*
U.S. Cl. 425—525 7 Claims



1. An apparatus for blow molding a finished, hollow, biaxially oriented container from a tubular parison of orientable plastic material heated to a suitable orientation temperature for the material, comprising:

a blow pin having a first portion of a first diameter for receiving an end portion of the parison and a second portion of a smaller diameter;

means for introducing a pressurized fluid through the blow pin;

gripping means disposed adjacent to and movable towards the blow pin for clamping an end portion of the parison onto said first portion of the blow pin;

a tubular sleeve slidably disposed about the blow pin;

means cooperating with the gripping means for longtudinally stretching the parison;

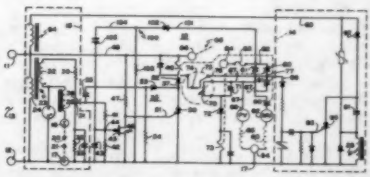
separable mold sections disposed to close over the blow pin, each section having a container forming and neck finishing cavity; and

operating means that cause (a) the gripping means to clamp an end portion of the parison onto the first portion of the blow pin, (b) the stretching means to stretch the parison along the longitudinal axis of the parison, axially orienting the parison material and causing the parison to neck down onto the second, smaller-diameter portion of the blow pin, (c) the mold sections to close the container forming and neck finishing cavities about the blow pin and the stretched parison, (d) the introducing means to introduce pressurized fluid into the stretched parison to transversely stretch the parison material and form the molded container, and (e) the tubular sleeve to be moved along the longitudinal axis of the blow pin, from a first position above the gripping means, to a second position with the sleeve within the gripping means and the neck finishing region of the cavity to cram oriented material into the cavity.

4,382,770
SAFE START FUEL BURNER CONTROL SYSTEM

B. Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 22, 1980, Ser. No. 199,404
Int. Cl.³ F23Q *23/00*
U.S. Cl. 431—26 6 Claims



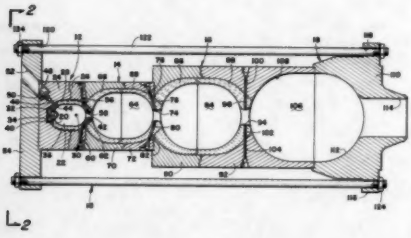
1. A fuel burner control system for a gas fuel burner having pilot gas source means, main burner gas source means, ignition means for the pilot gas source means, and power switch means adapted to initiate operation of said control system from a voltage source, including: flame detector means and flame detection circuit means having a voltage output in response to the presence of a flame at said flame detector means; solid state switching means having an input responsive to said flame detection circuit means, and having an output connected to control first relay means; said relay means having normally open contacts and normally closed contacts; flame signal simulating circuit means responsive to the application of said voltage source to said system upon said power switch closing to provide a brief false flame signal voltage to said solid state switching means to simulate a flame at said flame detector means thereby energizing said first relay means; second relay means having normally open contacts and normally closed contacts; relay conditioning circuit means responsive to the application of said voltage source upon the closing of said power switch means to condition said second relay means to

immediately operate after said first relay means completes an operating cycle responsive to said false flame signal voltage; said relay conditioning circuit means including thermal time delay means having a negative temperature coefficient resistance in series with said second relay means; a heater for said negative temperature coefficient resistance energized upon the closing of said power switch means; and relay contact interconnection means connecting said relay contacts to said ignition means, said pilot gas source means, and said main burner gas source means to safely operate said fuel burner; said safe operation requiring that said false flame signal voltage cause said solid state switch means to condition said second relay means to operate after said false signal is removed and a further flame signal is received.

4,382,771
GAS AND STEAM GENERATOR

Charles H. Carr, Tulsa, Okla., assignor to Lola Mae Carr, Tulsa, Okla.

Filed May 12, 1980, Ser. No. 149,263
Int. Cl.³ F23M *3/04*; F23L *17/00*
U.S. Cl. 431—158 **18 Claims**



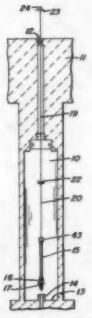
1. A method for generating high pressure fluid for a work operation and comprising providing a plurality of combustion stages in open communication with one another, initially introducing an oxygen source and a fuel source into a first combustion stage, igniting the fuel-oxygen mixture in the first combustion stage, creating an upstream pressure within the first combustion stage in excess of the pressure released into another succeeding combustion stage, admitting a water bearing fluid into the said another succeeding combustion stage for producing steam in the said another succeeding combustion stage, discharging usable energy from the said another succeeding combustion stage for use in the work operation, and recycling condensed water bearing fluid for injection into the said another succeeding combustion stage.

8. Apparatus for generating high pressure fluid for a work operation and comprising at least first and second stage combustion chambers in open communication with one another, mixing valve means in communication with the first stage combustion chamber, passageway means in independent communications with a source of oxygen and a source of fuel for simultaneously directing the oxygen and fuel to the mixer valve for injecting a fuel-oxygen mixture into the first stage combustion chamber, ignition means in communication with the first stage combustion chamber for igniting the fuel-oxygen mixture therein, restriction port means interposed between the first and second stage combustion chambers to provide upstream pressure within the first stage combustion chamber in excess of the pressure released through the restriction port means into the second stage combustion chamber, inlet means open to the first stage combustion chamber in the proximity of the restrictive port means for admitting water bearing fluid into the downstream side of the first stage combustion chamber for mixing with the products of combustion of the ignited fuel-oxygen mixture as the products of combustion are released through the restrictive port means into the second stage combustion chamber, wherein steam is produced from the water bearing fluid and is heated to a super-heated stage, restrictive port means provided at the downstream end of the second stage combustion chamber for release of the super heated steam therefrom to provide useful energy.

4,382,772
INSERT TUBES FOR RICH GAS BURNERS IN THE HEATING FLUES OF COKE OVENS AND METHOD AND APPARATUS FOR INSERTING OR REMOVING THE SAME

Folkard Wackerbarth; Heinz Thubeauville, and Horst Kleinert, all of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Division of Ser. No. 54,112, Jul. 2, 1979, abandoned. This application Aug. 21, 1980, Ser. No. 180,227
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829845
Int. Cl.³ F23C *5/06*
U.S. Cl. 431—189 **3 Claims**



1. A burner tube adapted to pass through an opening in the roof of a coke oven for insertion into a burner nozzle in the sole of a vertical heating flue for the coke oven, the lower portion of said burner tube being insertable into a bore in the nozzle with its outer periphery abutting the inner periphery of the nozzle and having radially-extending lugs on its outer periphery which rest on the upper surface of the burner nozzle when said lower portion of the burner tube is inserted therein, said burner tube being of constant diameter except at said lugs and having a wall thickness no greater than 6 millimeters throughout its length, and said burner tube being formed of fired alumina of at least 99.9% purity.

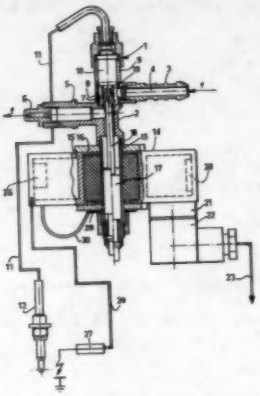
4,382,773
SAFETY IGNITION DEVICE NOTABLY FOR BURNER VALVE

Pierre Sobole, Clenay, France, assignor to Societe Bourguignonne de Mecanique, France

Filed May 28, 1980, Ser. No. 154,122
Claims priority, application France, Jun. 5, 1979, 79 14276
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—264 **9 Claims**

1. A safety ignition device for operation in combination with a valve for a gaseous fuel burner, comprising an elongate valve body having an axial bore, a gaseous fuel supply conduit opening into said bore, a fuel injector recess opening into said bore at a location spaced from said fuel supply conduit, an annular valve seat in said bore between said fuel supply conduit and said fuel injector recess, a valve member movable in said bore between a closed position in which it is seated on said valve seat and an open position in which it is unseated to permit flow of fuel from said fuel supply conduit to said fuel injection recess, means biasing said valve member to closed position, a thermocouple in position to be heated by said burner, a magnetic head at one end of said valve body and operable on said

valve member when energized to hold said valve member in open position, means connecting said magnetic head with said thermocouple to be energized when said thermocouple is heated by said burner, a control box at the opposite end of said valve body, a magnetic coil in said control box coaxial with said valve body box, a plunger core movable axially in said magnetic coil, force transmitting means between said plunger core and said valve member to move said valve member to



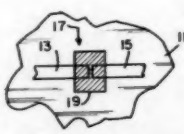
open position when said magnetic coil is energized, and electric circuitry sealed in said control box comprising gas ignition spark generating means and means for energizing said magnetic coil and said ignition spark generating means, including rectifying means, means for supplying alternating current to said rectifying means, a grounding lug and means for protecting said circuitry against transient voltage surges and for stabilizing the pressure, said protecting means comprising a varistor connected in circuit with said rectifying means.

4,382,774

SPARK GAP SWITCH

Boyd G. Brower, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,354
Int. Cl.³ F21K 5/02
U.S. Cl. 431—359 **8 Claims**



1. A flashlamp unit comprising:

a pair of high voltage flashlamps connected to an electrical circuit and arranged to fire individually and in sequence;

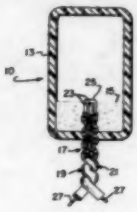
a radiation-responsive N/O switch connected into said electrical circuit in series connection with one and external from and adjacent the other one of said pair of flashlamps and positioned for radiation impingement from said one of said flashlamps, said flashlamp unit characterized by the improvement wherein said radiation-responsive switch is in the form of an arc gap having a radiation-responsive material thereon and therebetween said gap with radiation from said one flashlamp converting the radiation-responsive material and arc gap combination from an electrically non-conductive to an electrically conductive state.

4,382,775

MINIATURE PHOTOFLASH LAMP AND METHOD OF MAKING

Andre C. Bouchard, Peabody, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 96,606, Nov. 21, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,990
Int. Cl.³ F21K 5/02
U.S. Cl. 431—362 **12 Claims**



1. An electrically activated, miniature photoflash lamp comprising:

a light-transmitting envelope having an internal volume equal to or less than about one cubic centimeter;

a flash-producing composition located within said envelope for burning in a substantially localized manner to provide a flash of light upon ignition thereof, said composition including a predetermined quantity of a powdered metal material and a predetermined quantity of a powdered oxidizer material, said powdered metal material having a particle size within the range of from about 10 to about 150 microns; and

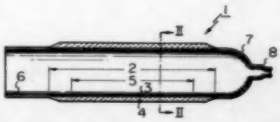
means for electrically igniting said flash-producing composition, said means extending within said envelope and in contact with said flash-producing composition and comprising a pair of conductive lead-in wires each having an insulative coating thereon and an exposed conductive end portion extending within said envelope, said lead-in wires twisted about each other and secured within a wall or end portion of said envelope.

4,382,776

QUARTZ TUBE FOR THERMAL PROCESSING OF SEMICONDUCTOR SUBSTRATES

Nobuo Kawase, Sagamihara, and Masayoshi Aigo, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 7, 1981, Ser. No. 290,975
Claims priority, application Japan, Aug. 18, 1980, 55/113149
Int. Cl.³ F27D 3/00, 5/00
U.S. Cl. 432—9 **5 Claims**



3. A method for the thermal processing of semiconductor substrates, comprising the step of: heating said substrates in a quartz tube having a double-layered central tube with an internal transparent fused quartz layer fused with an external sintered crystalline quartz layer, wherein both ends of said central tube are fused with the ends of two transparent fused quartz end tubes, which ends of the fused quartz end tubes have substantially the same inner diameter as that of said double-layered central tube.

4,382,777

PROCESS FOR MODIFYING THE PROPERTIES OF A SWELLING COAL, AN INSTALLATION FOR CARRYING OUT THE PROCESS AND A CHAMBER FOR TREATMENT OF COAL BY FLUIDIZATION AND CRUSHING

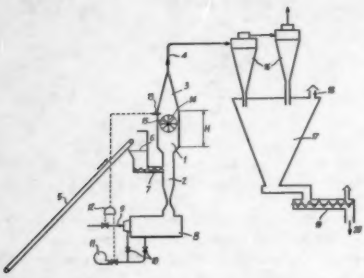
Serge L. J. E. Delessard, Forbach; Roger M. Puff, Freyming Merlebach, and Jean-Claude Kita, Forbach, all of France, assignors to Charbonnages de France, Paris, France

Filed Apr. 3, 1981, Ser. No. 250,715

Claims priority, application France, Apr. 4, 1980, 80 07726

Int. Cl.³ F27B *15/10*; B02C *1/00*

U.S. Cl. 432—15 **6 Claims**



1. Process for modifying by mild oxidation, the swelling properties of a swelling coal, in a chamber containing a fluidized bed supplied at its base with combustion gases having an oxygen content greater than 10% and with fines of coal to be treated, said chamber having at its top part a duct for removal of the treated fines and having crushing means located within the chamber comprising the steps of,

(a) introducing the fines to be treated into the chamber, said fines having a greater particle size than the treated fines,

(b) crushing said fines in said fluidized bed wherein the temperature of the combustion gases is regulated to a value of between 500° C. and 800° C., and the temperature within the fluidized bed is regulated between 300° C. and 360° C.

4,382,778

METHOD AND APPARATUS FOR REDUCING EXCESS AIR INLEAKAGE INTO AN OPEN RING-TYPE CARBON BAKING FURNACE

John G. Peacey, Pointe Claire, Canada; William F. Crowell, Sikeston, Mo., and Peter Whitmore, Auckland, New Zealand, assignors to Noranda Mines Limited, Toronto, Canada

Filed Sep. 4, 1981, Ser. No. 299,602

Int. Cl.³ F26B *9/12*; F27B *7/00*; F27D *1/18*

U.S. Cl. 432—18 **9 Claims**

1. In a process for heat treating carbon shapes in a ring-type furnace comprising a series of longitudinally arranged furnace sections each including a plurality of open-top chambers provided with longitudinal flues located between the chambers, said process including the steps of loading carbon shapes into the chambers of a predetermined furnace section and covering said carbon shapes with a protective blanket of packing material, successively preheating, baking and cooling the shapes in said chambers on successive cycles of operation wherein preheating of the carbon shapes is effected by drawing the hot combustion gases originating from preceding fuel-fired sections through the flues of sections located ahead of the fuel-fired sections, heating of the carbon shapes to the required baking temperature of the carbon shapes is affected by fuel injection into the flues of the fuel-fired sections, and cooling of the baked carbon shapes is effected by allowing cold air into the flues of the sections located behind the fuel-fired sections, and finally unloading the carbon shapes from the chambers, the improvement comprising covering the flues and the chambers of at least one section located ahead of the fuel fired sections so as to reduce excessive air inleakage in said one section and thus reduce fuel consumption.

4,382,779

REGENERATIVE SHAFT FURNACE FOR BURNING CARBONATE-CONTAINING RAW MATERIALS

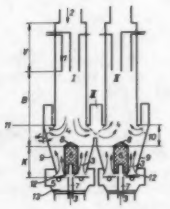
Erwin Füssl, Zürich, Switzerland, assignor to Maerz Ofenbau AG, Zürich, Switzerland

Filed Dec. 17, 1980, Ser. No. 217,543

Claims priority, application Switzerland, Apr. 30, 1980, 3350/80

Int. Cl.³ F27D *7/00*, *1/08*; C01F *1/00*; C01B *14/14*

U.S. Cl. 432—25 **8 Claims**



1. In a regenerative shaft furnace for burning carbonate-containing raw materials with two or more shafts, the walls of which form cooling zones therein, interconnected by ducts which operate in an alternating manner so that one shaft operates as the burning or parallel flow shaft and the other as the counterflow shaft wherein the burned raw material is cooled in the cooling zones of the shafts, the improvement which comprises said furnace having a displacer fitted into the cooling zone of each shaft, said displacer being arranged in the center of each shaft, and wherein the cooling zone loading, determined as a quotient of the production of burned raw material each day and the volume of the cooling zone of the shafts, is 3 to 6 t/m^3.

4,382,780

RADIO WAVE VIBRATIONAL ORTHODONTIC APPLIANCE

Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291

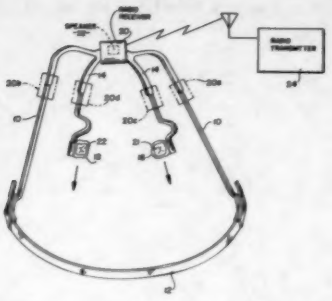
Filed May 17, 1982, Ser. No. 379,052

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—5 **6 Claims**

1. An orthodontic appliance comprising: an element for engaging a tooth to be moved and serving to apply a force to the tooth to move the tooth in a predetermined direction in the mouth of the patient; a radio receiver mounted on the appliance for receiving a radio wave of a predetermined amplitude

and frequency, and a speaker included in the radio receiver which vibrates upon the receipt of the radio receiver of the



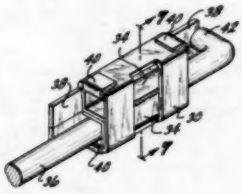
radio wave to cause said element to exert a pulsating force on the tooth.

4,382,781

DENTAL APPLIANCE

Richard C. Grossman, 211 Spalding Dr., #107 - South, Beverly Hills, Calif. 90212

Filed Oct. 13, 1981, Ser. No. 310,495
Int. Cl.³ A01C 7/00
U.S. Cl. 433—17 **14 Claims**



1. A dental appliance for the attachment to a band which band encircles a tooth and for use in supporting a variety of different sizes and shapes of elongated wire-like members including:

a metal tubular member and with the metal tubular member having an open passage extending from one end of the tubular metal to the other end and with the passage having a symmetrical cross-section and a greater height than width and with the passage having top and bottom portions each large enough to receive different sizes and shapes of wire-like members,

at least one insert member positioned within the passage through the tubular member at either the top or bottom portion and having a diameter in one direction approximately the same as the inside width of the passage and having a dimension in the other direction substantially equal to one-half of the height of the pressure through the tubular member and with two inserts substantially filling the passage,

the insert member also having an elongated passage smaller in cross-section than one-half of the passage through the tubular member and with the use of one or two inserts providing for a variety of different size passages through the tubular member for receiving and supporting a variety of different sizes and shapes of elongated wire-like members, and

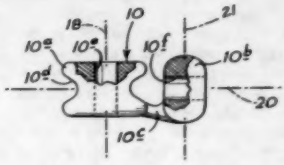
means for removability maintaining the at least one insert member in position within the tubular member.

4,382,782

END-CONNECTOR GROMMET DEVICE FOR ORTHODONTIC CHAIN

Paul E. Klein, Lake Oswego, and Roland M. Anderson, Wilsonville, both of Oreg., assignors to Modcom, Inc., Canby, Oreg.

Filed Jun. 23, 1982, Ser. No. 391,000
Int. Cl.³ A61C 7/00
U.S. Cl. 433—18 **3 Claims**



1. A rigid grommet-like end-connector device for use with an end of one (or plural) elastomeric, orthodontic, tension-applying chains of the kind having a string of plural, endless, stretchable loops, said device comprising

a first eyelet portion having a body of revolution with a generally planar circumferential groove designed for encircling receipt of an end loop in such a chain, said portion having an aperture extending along the axis of revolution of said body of revolution, substantially normal to the plane of said groove, adapted for attachment to an external orthodontic appliance, and

a second eyelet portion joined to said first eyelet portion, and disposed radially offset therefrom to one side of said groove, with an elongated aperture extending therethrough along an axis which is generally radial with respect to the axis of said body of revolution, and which generally occupies the plane of said groove,

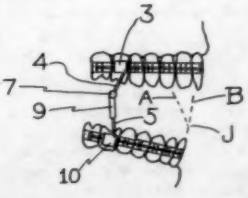
said second-mentioned aperture being adapted threadably to receive an end portion of such a chain, and to guide the same away from an end loop in the chain which is received by said groove, in a manner resisting removal of such a loop from the groove.

4,382,783

INTRAORAL DENTAL APPLIANCE TO CORRECT RETRUSIVE MANDIBLES ORTHOPEDICALLY IN THE TREATMENT OF CLASS II MALOCCLUSIONS

Farel A. Rosenberg, 10535 Wilshire Blvd., Los Angeles, Calif. 90024

Filed Jun. 28, 1982, Ser. No. 392,898
Int. Cl.³ A61C 7/00
U.S. Cl. 433—19 **7 Claims**



1. An intraoral dental appliance to improve a retrusive mandible orthopedically in the correction of Class II malocclusions comprising:

(a) An upper pair of anchoring means each secured preferably to any upper teeth functioning as first molars on both the right and left sides of the mouth;

(b) A lower pair of anchoring means each secured preferably

to any lower teeth functioning as first molars on both right and left sides of the mouth.

(c) A pair of upper mounting blocks pivotably attached to said upper pair of anchoring means;

(d) A pair of lower mounting blocks pivotably attached to said lower pair of anchoring means;

(e) A pair of relatively short links pivotably attached to said pair of upper blocks;

(f) A pair of relatively long pistons pivotably attached to said pair of lower blocks;

(g) A pair of cylinders each pivotably joined at one end to one of said upper links and each slidably enclosing on the other end one of said pistons, thus forming partially-telescoping, hinged couplings between the upper and lower rows of teeth on both sides of the mouth;

whereby closure of the mouth from an open position first causes uniform folding of the hinged couplings and simultaneous movement of the pistons into the cylinders until said relatively short links are fully seated within said upper blocks and then causes continued cylinder-piston closure and arcuate movement of the pistons so that a force is generated which moves the mandible forward, thus aligning the lower row of teeth with the upper row.

4,382,784

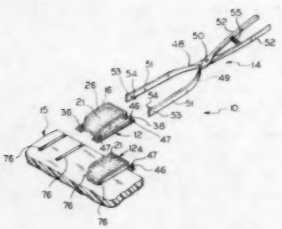
CUSTOM DENTAL SHADE GUIDE SELECTOR AND METHOD FOR ITS USE

Robert T. Freller, 110 Chipwood Crescent, Willowdale, Ontario, Canada (M2J 3X7)

Filed Jul. 2, 1980, Ser. No. 164,542

Int. Cl.³ A61C *19/10*

U.S. Cl. 433—26 **20 Claims**



1. A dental shade guide selector including a sample tooth having a specific shade or color for matching with the color or shade of real teeth for providing the color or shade for an artifical crown or tooth having a support structure and a veneer of porcelain or the like, said sample tooth comprising a frame having:

a body portion having a front surface and a rear surface, an incisor end and a gingival end for positioning adjacent the gum line of the patient when matching the color of the sample tooth with the color of adjacent real teeth;

a rim extending outward from the periphery edge of the front surface of the body portion;

a layer of porcelain affixidly attached to the body portion and confined within the area bordered by said rim;

a pair of spaced apart feet attached to the rear surface for defining a channel therebetween for receiving the support structure of said artificial tooth inside the patient's mouth, the outer parts of said feet extending outward from the incisor end of the body portion; and

a pair of tongs for gripping said outer parts of said feet.

4,382,785

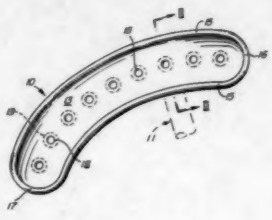
MULTIPLE INLET DENTAL IMPRESSION TRAY

Michael P. Lococo, 4927 Victoria Ave., Niagara Falls, Ontario, Canada (L2E 1X1)

Filed Feb. 5, 1982, Ser. No. 346,140

Int. Cl.³ A61C *9/00*

U.S. Cl. 433—36 **8 Claims**



1. Dental impression tray comprising:

a concavely shaped inner part defined by the bottom wall and by a plurality of side walls and having the shape of an arcuately elongated cavity of a width greater than the teeth upon which the tray is to be placed to define a space adjacent such teeth for receiving an impression material;

a plurality of impression material injection passages communicating said cavity with the exterior of the tray, said passages being arranged along a curve following the arc of said arcuately elongated cavity and being spaced from each other a distance selected such that the spacing between the centers of two adjacent passages generally corresponds to the spacing between the centers of two adjacent teeth of a human jaw;

connecting means at an exterior of said bottom wall and near each passage for releasably connecting each respective passage to an outlet of injection means for injecting a pasty impression material into said tray;

whereby a pasty impression material can be injected into said cavity at at least two discrete locations spaced from each other along the cavity.

4,382,786

DENTAL HANDPIECES WITH SUPPLIED OPERATING MEDIA

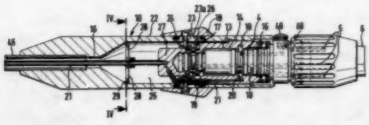
Gerd Löhn, and Stefan Beier, both of Biberach, Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Aug. 25, 1981, Ser. No. 296,157

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034930

Int. Cl.³ A61C *1/10, 1/12*

U.S. Cl. 433—85 **3 Claims**



1. A dental treatment installation comprising at least one dental handpiece having an air-operated drive motor and at least one outlet for discharging operating media used for dental purposes, such as cooling and/or rinsing media; a spray handpiece having a spray outlet for discharging a spray composed of water, or water and air; a control arrangement for controlling the supply of operating media to the handpieces; and a storage device for the handpieces having storage-switching means which are arranged to place the handpieces on stand-by

to receive operating media upon extraction of the handpieces from the storage device, in which:

the control arrangement includes supply sleeves having first, second and third ducts for supplying to the handpieces respectively cooling or rinsing air, drive air for the motor of the dental handpiece, and water, and couplings for releasably coupling the supply sleeves to the handpieces; and an operator-controlled device for regulating the supply of operating media to the handpieces and including first switching means for controlling the supply of air to drive the motor of the dental handpiece and second switching means for controlling the supply of spray, composed of cooling or rinsing air, or cooling or rinsing water, to the dental handpiece, and in which:

each coupling comprises a first coupling member connected to one of the handpieces and a second coupling member connected to a respective one of the supply sleeves, said supply sleeve being capable of supplying operating media, under the control of said operator-controlled device, to the dental handpiece or to the spray handpiece, as desired, whenever the handpiece is coupled-up to any one of the supply sleeves via a respective coupling; and

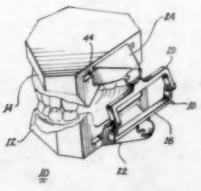
said first coupling member connected to the spray handpiece includes (a) means for blocking said first duct of any supply sleeve to which it is coupled in order to prevent the supply of the cooling or rinsing air to the spray handpiece, (b) connecting means for connecting said second duct of any supply sleeve to which it is coupled in order to supply said drive air to the spray outlet of the spray handpiece, (c) means communicating with said third duct of any supply sleeve to which it is coupled in order to supply water to the spray outlet of the spray handpiece (d) an external operating means provided on the spray handpiece for preventing the supply of air to the spray outlet as and when required, said external operating means comprising an annular switching device which is axially displaceable on the exterior of the spray handpiece; and including a radially inwardly extending projection provided on the annular switching device, an opening formed in the spray handpiece through which said projection extends, and a blocking member constituting said connecting means and arranged in the spray handpiece to be engaged by said projection for movement between opened and closed positions relative to a passage for the flow of drive air through the spray handpiece.

4,382,787

DENTAL MODEL ARTICULATOR

Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Filed May 7, 1981, Ser. No. 261,562
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—64 **30 Claims**



1. An articulator for correlating the casts of a dental model, said articulator comprising in combination:

(a) a pair of mounting means, one of said mounting means being attachable to each cast;

(b) a pair of resiliently flexible U-shaped mirror image brackets for operatively engaging said mounting means with one another to accommodate movement of the casts relative to one another, each said bracket including a pair of legs extending from a base and pivot means disposed at the extremity of each leg for pivotally engaging the corresponding leg of an interconnected bracket;

(c) pivot means for pivotally interconncting the brackets of said pair of brackets to provide pivotal movement of the casts relative to one another about a pivotal axis, said pivot means including pin means disposed at the extremity of one leg and bearing surface means disposed at the extremity of an interconnected leg for pivotally engaging said pin means, said pin means including an end plate for defining a space intermediate said leg and said end plate to receive said interconnected leg supporting said bearing surface means and preclude lateral translation of said brackets relative to one another along the axis of rotation of said pin means, said bearing surface including a slot terminating in a circular bearing surface to provide a snap fit for said pin means;

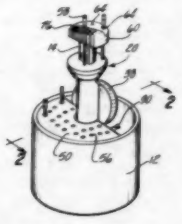
(d) a socket disposed in each of said mounting means and a ball attached to each of said brackets for engagement with the respective one of said sockets said socket including a pair of fingers for retaining said ball for attaching and fixedly retaining said pair of brackets to said pair of mounting means at any selectable angle within a range of predetermined angles in any of the axis of rotation to angularly orient one of the casts with respect to the other cast at any selectable angle within a range of angles about three axis of rotation and to locate one of the casts with respect to the other cast within two planes of translation.

4,382,788

WORKING WELL

Joseph J. Pelerin, 3756 Shallowbrook, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 115,346, Jan. 25, 1980, Pat. No. 4,353,694. This application Jan. 8, 1981, Ser. No. 223,561
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—77 **10 Claims**



1. A working well for use during root canal therapy comprising:

a base having a side wall,

an elongated stem secured at one end to said base so that said stem extends generally vertically upwardly from said base,

means for supporting at least one elongated dental implement adjacent the upper end of the side wall so that a portion of the implement depends downwardly from said support means,

a slide assembly vertically slidably mounted to said stem and having an abutment surface formed at its lower end and beneath said support means,

a plate having an upper surface and at least one aperture formed through it, said plate attached to the upper end of said stem,

an annular member secured to the upper end of the slide assembly, said annular member having an upper planar surface positioned beneath said at least one plate aperture,

wherein said slide assembly is longitudinally dimensioned so that the lineal distance between said support means and

said abutment surface is substantially the same as the lineal distance between at least a portion of the upper surface of said plate and the upper planar surface of said annular member regardless of the position of the slide assembly with respect to the stem, and

means for locking said slide assembly to said stem at an adjusted vertical position.

4,382,789

MANUAL PRESSURE SYRINGE FOR ODONTOLOGICAL USE

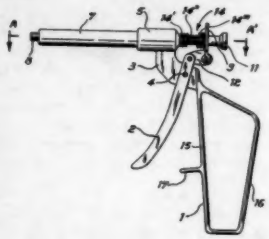
Domenico Colombo, Via Musa 4, Como, Italy, and Americo Colombo, Como, Italy, assignors to Domenico Colombo, Como, Italy

Filed Oct. 16, 1981, Ser. No. 312,104

Claims priority, application Italy, Jan. 15, 1981, 19138 A/81

Int. Cl.³ A61C 5/04

U.S. Cl. 433—89 **6 Claims**



1. A manual pressure syringe for odontological use, comprising:

a handgrip having a movable control lever coupled thereto;

a bushing coupled to said handgrip;

a tubular barrel coupled to said bushing for a cartridge having a movable piston;

a shaft having a smooth surface which is slidably mounted in said bushing for longitudinally-reciprocable movement within said barrel, and for acting upon a cartridge piston;

a thrust lever for effecting movement of said shaft operated by said control lever; and

a coil spring arranged between said thrust lever and bushing, comprising two end parts, the turns of which are of larger diameter than that of said shaft, and an intermediate part, the turns of which are of substantially the same diameter as that of said shaft.

4,382,790

DENTAL HANDPIECE

Hans Loge; Bernhard Kuhn, both of Biberach; Erich Bareth, Ummendorf, and Gerd Löhn, Biberach, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

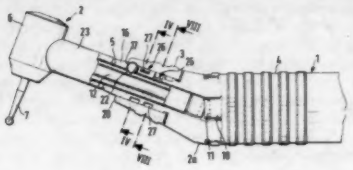
Filed Sep. 12, 1980, Ser. No. 186,485

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937885; Aug. 1, 1980, 3029284

Int. Cl.³ A61C 1/08

U.S. Cl. 433—126 **34 Claims**

1. Dental headpiece comprising a gripping sleeve-like circular base member; a headpiece having a work tool supported thereon detachably connected to said sleeve-like base member; said headpiece having a connecting sleeve insertable into a bore in an end of said base member; said base member having at least one cutout therein in its circular sleeve wall; a roll body being radially movably supported in each of said cutouts so as to have a portion of the volume of the roll body extending inwardly therethrough; a sleeve-like coupling element surrounding said base member and being movably arranged relative to said base member, said coupling element including an inclined cam surface for engaging said roll body and radially moving said roll body, when said coupling element is moved relative to said base member, to cause said roll body to assume a clamping fit in contact against said connecting sleeve; and a



separate spring means for resiliently bearing between said base member and said connecting sleeve for securing a clamping fit of said roll body to prevent inadvertent loosening of said roll body relative to said connecting sleeve of the headpiece.

4,382,791

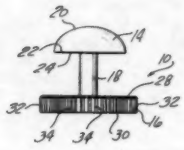
INTRAMUCOSAL INSERT AND METHOD OF RETAINING A DENTURE UTILIZING THE SAME

Carl E. Misch, 1611 Monroe, Dearborn, Mich. 48124

Filed Jan. 4, 1982, Ser. No. 336,568

Int. Cl.³ A61C 8/00

U.S. Cl. 433—172 **3 Claims**



1. An intramucosal insert for securing a denture in the mucosal tissue surrounding the jawbone of a patient comprising:

a dome-shaped head adapted to be seated within the mucosal tissue;

a planar base having top and bottom surfaces and contiguous side edges;

a plurality of grooves formed in the side edges of the base extending between the top and bottom surfaces of the base; and

an elongated neck having a cross section narrower than the cross section of the head connecting the head and the base.

4,382,792

BONDING TO CALCIFIED TISSUES

Dennis C. Smith, Markham, and Rolf Maijer, Ladysmith, both of Canada, assignors to Dennis Smith Consulting Limited, Toronto and Romada Holdings Ltd., Duncan, both of, Canada

Filed Feb. 17, 1981, Ser. No. 235,166

Int. Cl.³ A61K 6/08

U.S. Cl. 433—217 **11 Claims**

1. In a method of bonding materials to calcified tissues including human teeth, the improvement which comprises forming a crystal growth of gypsum crystals having a length of about 20 micrometers and a thickness of about 2 to 5 micrometers adhered to and nucleated within a surface of said tissues and interlocking said bonding with said crystal growth.

7. A method of treating calcified tissue, which comprises contacting a surface of said tissue with a substance capable of forming gypsum crystals having a length of about 20 microme-

ters and a thickness of about 2 to 5 micrometers attached to and nucleated within the surface for a time sufficient to form said

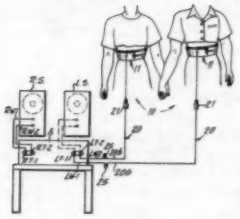
crystals, and subsequently removing said substance from said surface.

4,382,793

DEVICE FOR FEELING AUDIO AMPLIFIER OUTPUT

Douglas F. Anderson, 958 Frances La., Ft. Pierce, Fla. 33450

Filed Dec. 9, 1981, Ser. No. 329,264
Int. Cl.³ G09B *21/00*
U.S. Cl. 434—112 **11 Claims**



1. A device for feeling music being played through a first channel of a stereo amplifier having a pair of output terminals for said channel by applying the output of said first channel through the bodies of one or more participants while the music on the other channel is being played through a speaker, said device comprising a pair of electrically chargeable conductors, each having an exposed surface area for contacting the skin of a participant, a lead wire electrically secured at one end to each of said conductors and having an opposite end adapted to connect to one of said output terminals, at least one of said lead wires having a replaceable interposed fuse to limit the current output between the two amplifier terminals of said first channel.

4,382,794

INSTRUCTIONAL AID

Ann M. Preus, 60 Seymour Ave., SE., Minneapolis, Minn. 55414

Filed Feb. 6, 1981, Ser. No. 232,121
Int. Cl.³ G09B *23/02*
U.S. Cl. 434—193 **6 Claims**

1. An instructional aid comprising:

a plurality of objects in which each of said objects:

(a) corresponds to some integer number from one to ten inclusive,

(b) has a thickness dimension which represents the relative value of the number to which it corresponds,

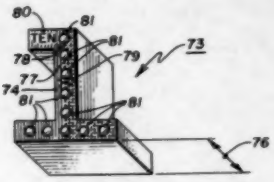
(c) has the shape of the Arabic numeral representing the number to which the object corresponds, with the exception of the object corresponding to the number ten where that object has the shape of the Arabic numeral representing the number one.

(d) has at least one surface being of a color or combination of colors representing the prime number or the prime factors of the composite number to which it corresponds, wherein:

(i) said one surface of each of the objects corresponding to the prime numbers two, three, five and seven is a different color,

(ii) said one surface of each of the objects corresponding to the composite numbers four and eight is the same color as the color of said one surface of the object corresponding to the prime number two,

(iii) said one surface of the object corresponding to the composite number nine is the same color as the color of said one surface of the object corresponding to the prime number three,



(iv) said one surface of the object corresponding to the composite number six is divided into two portions, one portion being of the same color as the color of said one surface of the object corresponding to the prime number two, and the other portion being of the same color as the color of said one surface of the object corresponding to the prime number three, and

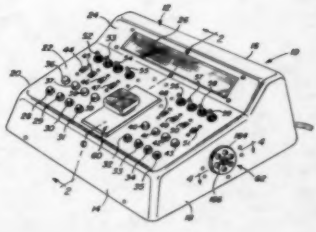
(v) said one surface of the object corresponding to the composite number ten is divided into two portions, one portion being of the same color as the color of said one surface of the object corresponding to the prime number two and the other portion being of the same color as the color of said one surface of the object corresponding to the prime number five.

4,382,795

THERAPEUTIC AID FOR THE HANDICAPPED

Ellwood J. Collins, and Helen M. Collins, both of 2020 Gregg St., Carson City, Nev. 89701

Filed Feb. 19, 1981, Ser. No. 235,961
Int. Cl.³ G09B *5/00*; A63B *23/00*
U.S. Cl. 434—258 **14 Claims**



1. A therapeutic aid for developing hand and eye coordination of a user, said aid comprising:

a housing;

switch means mounted on said housing, said switch means being selectively actuatable by said user;

display means mounted on said housing and being operable in response to an actuation of said switch means by said user;

exercise means mounted on said housing and being selec-

tively actuatable by said user for purposes of improving said user's muscle control and strength; and

power supply means for energizing said display means in response to actuation of one of said switch means and the execise means.

4,382,796

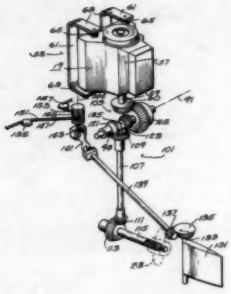
TRANSOM MOUNTED MARINE PROPULSION DEVICE WITH VERTICAL CRANKSHAFT AND TILTABLE LOWER UNIT AND RUDDER

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 188,323, Sep. 18, 1980, Pat. No. 4,371,348. This application Mar. 26, 1981, Ser. No. 247,792

Int. Cl.[3] B63H *21/26*

U.S. Cl. 440—51 18 Claims



1. A marine propulsion device comprising a power head including an internal combustion engine having a vertical crankshaft with a lower end having fixed thereon a bevel gear, a lower unit including a rotatably mounted propeller shaft carrying thereon a propeller, means pivotally connecting said lower unit to said power head for lower unit vertical tilting movement about a horizontal tilt axis, a horizontal cross shaft journaled coaxially with said tilt axis, a transfer gear fixed to said cross shaft and in mesh with said bevel gear, and a drive shaft extending in said lower unit and drivingly connected to said propeller shaft and to said cross shaft.

4,382,797

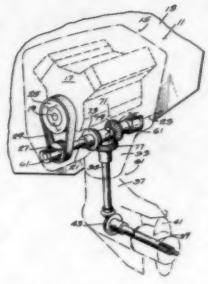
TRANSOM MOUNTED MARINE PROPULSION DEVICE WITH LATERAL CRANKSHAFT AND POWER SHAFT

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 188,323, Sep. 18, 1980, Pat. No. 4,371,348. This application Mar. 26, 1981, Ser. No. 247,995

Int. Cl.[3] B63H *5/12*

U.S. Cl. 440—53 6 Claims



1. A marine propulsion device comprising a power head adapted for mounting to a boat transom and including an engine having a crankshaft extending horizontally and parallel to the transom when said engine is boat mounted, a cross shaft mounted in parallel relation to said crankshaft and behind the transom when said engine is boat mounted, means operably connected between said crankshaft and said cross shaft for rotating said cross shaft in response to rotation of said crankshaft, a lower unit including an upper housing section mounted to said power head for tilting movement relative thereto soley about the axis of said cross shaft during normal operation of said marine propulsion device, a drive shaft extending in said upper housing section in perpendicular relation to said cross shaft, a reversing transmission operably connected between said cross shaft and said drive shaft, and a propeller mounted on said lower unit and drivingly connected to said drive shaft.

4,382,798

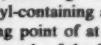
ANTI-SOILING TREATING AGENT

Yasuyuki Suzuki, Izumi-ohtsu, and Tadashi Ito, Osaka, both of Japan, assignors to Dainippon Ink. & Chemicals Inc., Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,451
Claims priority, application Japan, Aug. 13, 1980, 55/110384
Int. Cl.³ C08K 5/16; C08L 27/12; C14C 11/00; D06M 9/00
U.S. Cl. 8—94.1 R 23 Claims

1. An anti-soiling treating agent having a solids content of 0.001 to 70% comprising

(a) a perfluoroalkyl-containing hybrid urethane compound (I) resulting from the addition reaction of two perfluoroalkyl-containing alcohols which have a difference in melting point of at least 20° C. and are selected from compounds of the following formula



wherein Rf represents a linear or branched perfluoroalkyl group, A is the group $-CH_2-_l$ in which l is an integer of 0 to 5, the group

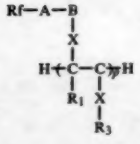
in which R is a hydrogen atom, an alkyl group having not more than 12 carbon atoms or a substituted alkyl group, the group

in which R is as defined above, a phenylene group, an ether linkage, or an ester linkage, and B represents an alkylene or aralkylene group having not more than 12 carbon atoms, or a derivative thereof containing an ether linkage,

the mole ratio between the two alcohols being 33–67:67–33, with a polyisocyanate, said addition reaction being carried out at a temperature of 50° to 150° C. in the presence or absence of an orgainic solvent in an anhydrous condition while maintaining the equivalent ratio of the alcohol to the isocyanate at from 1:1.2 to 1.2:1, or

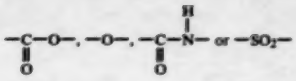
(b) a composition comprising the perfluoroalkyl-containing hybrid urethane compound (I) and a fluorine-free vinyl polymer (II) having a Rockwell hardness of 90 to 130, the weight ratio of (I) to (II) being in the range of from 1:10 to 10:1, or

(c) a composition comprising the perfluoroalkyl-containing hybrid urethane compound (I) and a perfluoroalkyl-containing vinyl polymer (III), said perfluoroalkyl-containing vinyl polymer (III) being represented by the general formula

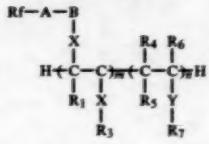


(III-1)

wherein Rf, A and B are as defined above, X represents a divalent bonding group such as



R_1 and R_2 represent a hydrogen atom or an alkyl group having not more than 2 carbon atoms, R_3 represents Rf—A—B— or an alkyl group having not more than 8 carbon atoms, and p is a number of 5 to 100 which shows the number of recurring monomeric units, or being represented by the general formula



(III-2)

wherein Rf, A, B, X, and R_3 are as defined above, R_4, R_5 and R_6 each represents a hydrogen atom, an alkyl group having not more than 8 carbon atoms, or a halogen atom other than fluorine, Y represents a divalent bonding group such as an ester, ether or an acid amide group or a direct bond between R_7 and a carbon atom in the main chain, R_7 represents a hydrogen atom, a halogen atom other than fluorine, a nitrile group, or an alkyl, alkenyl or aryl group having not more than 20 carbon atoms, and m and n independently represent a number of 5 to 100 which shows the number of recurring monomeric units, provided that m and n are selected such that the ratio of the two monomers to be copolymerized is in the range of from 3:97 to 90:10, wherein the weight ratio of the hybrid urethane compound (I) to the perfluoroalkyl-containing vinyl polymer (III) is in the range of from 1:10 to 10:1 or

(d) a composition comprising the perfluoroalkyl-containing hybrid urethane compound (I), the perfluoroalkyl-containing vinyl polymer (III) and the fluorine-free vinyl polymer (II), wherein the weight ratio of the hybrid urethane compound (I) to the perfluoroalkyl-containing vinyl polymer (III) is in the range of from 1:10 to 10:1, and the weight ratio of the sum of (I) and (III) to the fluorine-free vinyl polymer (II) is in the range of from 1:10 to 10:1, and if desired, water and/or an organic solvent.

4,382,799

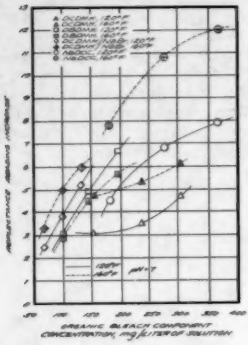
LOW TEMPERATURE BLEACHING WITH POSITIVE BROMINE IONS (BR^+)

Thomas B. Davis, Cos Cob, Conn., and Theodore A. Girard, Williamsport, Pa., assignors to Glyco Chemicals, Inc., Greenwich, Conn.

PCT No. PCT/US80/01563, § 371 Date Oct. 7, 1981, § 102(e) Date Oct. 7, 1981, PCT Pub. No. WO81/02314, PCT Pub. Date Aug. 20, 1981
Continuation-in-part of PCT/US80/00133, Feb. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 911,190, May 30, 1978, Pat. No. 4,235,599. This PCT application Nov. 21, 1980, Ser. No. 310,904
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ D06L 3/06
U.S. Cl. 8—107 40 Claims

1. A method for the effective bleaching of textile goods at temperatures at or below about 140° F. which consists essen-

tially in exposing same to an aqueous solution, at said temperatures, containing an amount effective for bleaching of a mate-



rial capable of generating positive bromine ions (Br+) during the bleaching of said textile goods.

4,382,800

FREE AMINE-CONTAINING POLYMERIC DYES

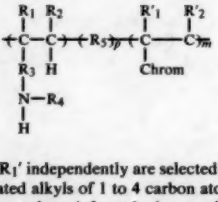
Patricia C. Wang, and Robert E. Wingard, Jr., both of Palo Alto, Calif., assignors to Dynapol, Palo Alto, Calif.

Continuation of Ser. No. 832,254, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 638,730, Dec. 8, 1975, Pat. No. 4,051,138. This application Sep. 28, 1981, Ser. No. 306,368

Int. Cl.³ D06P *3/04;* C09B *69/10*

U.S. Cl. 8—404 **1 Claim**

1. A process for dyeing a proteinaceous fiber substrate which comprises applying to said substrate a solution of a free amine-containing polymeric colorant comprising an aqueous solvent of pH 2.0 to 4 inclusive in which is dissolved from 100 ppm to 0.5% by weight of a polymeric colorant having the structural formula



wherein R_1 and R_1' independently are selected from hydrogen and lower saturated alkyls of 1 to 4 carbon atoms; R_2 and R_2' independently are selected from hydrogen, lower saturated alkyls of 1 to 4 carbon atoms and phenyl; R_3 is selected from a simple carbon to nitrogen single covalent bond, 1 to 4 carbon atom lower saturated alkylene bridges, and a (phenylene) bridge; R_4 is selected from hydrogen and lower saturated alkyls of 1 to 4 carbon atoms; R_5 is selected from a carbon to carbon single bond, ethylene, a 1 to 4 carbon saturated alkyl-substituted ethylene, a 6–8 carbon aromatic-substituted ethylene, a

substituted ethylene wherein R_7 is selected from hydrogen 1 to 4 carbon alkyls, and —O—CH_3, an

substituted ethylene, and a nitro-substituted ethylene, Chrom is an optically chromophoric group and n, p, and m are numbers such that n is at least ½m and the sum of n+m+p is such as to assure a molecular weight of at least 2000 to the colorant molecule, and thereafter rinsing the substrate with water and drying the substrate.

4,382,801

PROCESS FOR SPIN DYEING POLYMERS OR COPOLYMERS OF ACRYLONITRILE WITH QUATERNIZED HETEROCYCLIC DIAZO DYE AND TETRAFLUORO-BORATE ANION

Peter Loew, Münchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

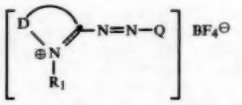
Filed Dec. 14, 1981, Ser. No. 330,745

Claims priority, application Switzerland, Dec. 24, 1980, 95751/80

Int. Cl.³ C09B *44/10;* D06P *3/60*

U.S. Cl. 8—538 **12 Claims**

1. A process for spin dyeing polymers of acrylonitrile or copolymers containing predominantly acrylonitrile, which process comprises adding to the spinning solution a monocationic dye salt of the formula



wherein D is the group of atoms necessary to close a 5-membered heterocyclic ring containing two N-atoms, or to close a 6-membered heterocyclic ring, which rings may optionally contain fused benzene rings, or is the group of atoms necessary to close a benzthiazole ring, and Q is the radical of a carbocyclic or heterocyclic aromatic coupling component, and R_1 is alkyl, aralkyl or aryl.

4,382,802

FIRE STARTERS

Hans C. Beinke, Manchester, Mo., and Robert C. Cuca, Edwardsville, Ill., assignors to K-V Pharmaceutical Company, St. Louis, Mo.

Filed Jun. 2, 1981, Ser. No. 269,527

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **7 Claims**

1. An emulsion that acts as a fire starter which has a lipoidal internal phase comprising at least 70% of the emulsion and a nonlipoidal external phase the improvement which comprises emulsifing said internal and external phases with an emulsifier which is an ethoxylated and propoxylated C_{12}–C_{20} blend of fatty alcohols wherein the mole ratio of ethylene oxide to propylene oxide is between 2-1/2:1 and 3-1/2:1.

4,382,803

TOOLS FOR OPTICAL LENSES

Frederic P. Allard, Warwick, R.I., assignor to Rowland, Incorporated, Berlin, Conn.

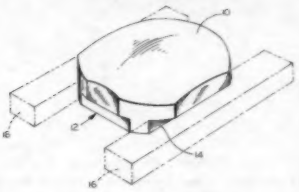
Filed Jul. 31, 1980, Ser. No. 174,269

Int. Cl.³ C09K *3/14*

U.S. Cl. 51—298 **27 Claims**

1. A tool for use in surfacing of optical lenses produced by a method comprising the steps of:

a. preparing a resin component including:
(1) a reactive epoxy resin, and
(2) a filler consisting of finely divided aluminum, a finely divided inert mineral, or a mixture thereof;
b. preparing a hardener component including:
(3) at least one hardener reactive with said epoxy resin to produce cross-linking, and
(4) a filler consisting of finely divided aluminum, a finely divided inert mineral, or a mixture thereof;
c. admixing said resin component and said hardener component in a ratio selected to provide, in the resulitng admixture, a suitable amount of said hardener to effect substantially complete reaction with said epoxy resin and a high degree of cross-linking, and to provide about 5 to 15 percent of said aluminum, and about 50 to 65 percent of said mineral, based upon the weight of said admixture;
d. introducing said admixture into the casting system of a centrifugal casting machine having at least one casting cavity dimensioned and configured to produce said tool;



e. operating said machine to effect centrifugal casting of said admixture into said casting cavity;
f. maintaining said admixture at an appropriate temperature for a period of time sufficient to effect substantial cross-linking between said resin and said hardener so as to thereby produce said tool; and
g. removing said tool from said casting cavity; said tool comprising a monolithic body having a generally spherical surface portion adapted to engage on optical lens member, and a mounting portion spaced from said spherical surface portion and having means thereon corresponding to features of said surface portion adapted to permit accurate registration of said surface portion elements with respect to the device in which said tool is to be mounted, said tool being uniformly hard, durable and dimensionally stable, and being adapted for machining to modify the dimensions and configurations of said portions thereof.

4,382,804

FLUID/PARTICLE SEPARATOR UNIT AND METHOD FOR SEPARATING PARTICLES FROM A FLOWING FLUID

Fred Mellor, 57 Sandringham Rd., Dalston, London E8 2LR, England

Continuation-in-part of Ser. No. 15,045, Feb. 26, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,530

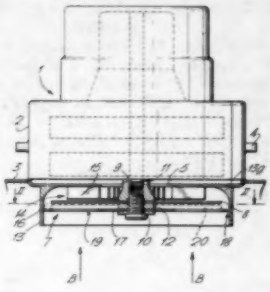
Claims priority, application United Kingdom, Feb. 26, 1978, 7828/78

Int. Cl.³ B01D *45/14*

U.S. Cl. 55—1 **16 Claims**

1. A fluid/particle separator assembly comprising in combination:
(a) a centrifugal impeller mounted on a rotor drive shaft;
(b) a rotary separator mounted coaxially on said drive shaft adjacent said impeller, said separator having apertures bounded, at least in part, by surfaces inclined to the axis of said separator and facing in a circumferential direction with respect to said separator and away from said centrifugal impeller;
(c) drive means connected to rotate said drive shaft so that said impeller and said separator expels fluid centrifugally from the periphery of said impeller and induce a fluid flow through said separator towards said impeller and to move said surfaces of said separator in said circumferential direction, whereby the action of said separator separates particles from said fluid and fluid containing a substantially reduced concentration of particles is centrifuged outwardly by said impeller.

2. A method of separating particles from a flowing fluid wherein said flow is directed at an inlet side of a rotary separator having apertures bounded, at least in part, by surfaces inclined to the axis of said separator and being on an outlet side



of said separator, and facing in a circumferential direction with respect to said separator and towards said flow, and said rotary separator is rotated in a sense to move said surfaces in said circumferential direction so as to occlude direct flow through said apertures; the relationship of said surfaces, the speed of rotation of the separator and the fluid flow rate being such that particles in said fluid rebound from said separator to the inlet side thereof, the fluid passing through said separator and being centrifuged by said surfaces.

4,382,805

SYSTEM FOR AUTOMATICALLY CONTROLLING THE BREAKDOWN VOLTAGE LIMIT OF AN ELECTROFILTER

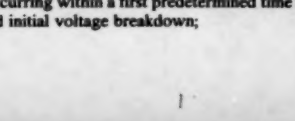
Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,452

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015275

Int. Cl.³ B03C *1/00*

U.S. Cl. 55—2 **5 Claims**



1. A method for automatically controlling the voltage of an electrostatic filter with respect to its breakdown voltage limit, the method having the steps of increasing the filter voltage as a function of time until a voltage breakdown is detected, and reducing the filter voltage by a predetermined amount after the voltage breakdown is detected, the invention comprising the further steps of:
(a) detecting a secondary voltage breakdown following an initial voltage breakdown, said secondary voltage breakdown occurring within a first predetermined time interval after said initial voltage breakdown;

(b) lowering the filter voltage to a zero value after detecting said secondary voltage breakdown; and

(c) raising the filter voltage after a second predetermined time interval to a new filter voltage value, said raising of the filter voltage occurring over a third predetermined time interval, said first predetermined time interval being longer than the sum of said second and third predetermined time intervals.

4,382,806

METHOD FOR SEPARATING WATER FROM A GAS SAMPLE

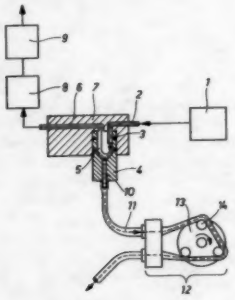
Matti A. Hakala; Antti L. J. Martikainen, both of Helsinki, and Jorma J. Auvinen, Nummela, all of Finland, assignors to Instrumentarium Oy, Helsinki, Finland

Division of Ser. No. 71,562, Aug. 31, 1979, Pat. No. 4,304,578. This application Jul. 20, 1981, Ser. No. 285,261

Claims priority, application Finland, Sep. 1, 1978, 782693; Jun. 1, 1979, 791769

Int. Cl.³ B01D *51/06*

U.S. Cl. 55—18 **2 Claims**



1. A method of respiratory gas analysis, comprising the steps of conducting a gas sample from a patient into a water separating chamber having a tapered lower end, separating the water from the gas in said chamber, continuously withdrawing the separated water from the lower end of the chamber through a water outlet conduit by applying sub-atmospheric pressure to said water outlet conduit, collecting the withdrawn water in a collection container separate from said separating chamber, continuously withdrawing the gas from the upper end of the chamber through a gas outlet conduit by applying a sub-atmospheric pressure to said gas outlet conduit, regulating the flow through the respective conduits whereby the flow through said water discharge conduit is substantially less than the flow through said gas outlet conduit, and analyzing the gas withdrawn through said outlet conduit.

4,382,807

APPARATUS FOR SEPARATING FOREIGN MATTER FROM A GAS WITH A HEAT EXCHANGER

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Century 21 Pollution Control, Inc., Minneapolis, Minn.

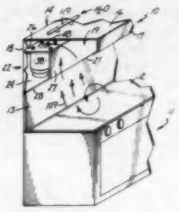
Continuation-in-part of Ser. No. 253,311, Apr. 13, 1981, Pat. No. 4,364,754. This application Aug. 10, 1981, Ser. No. 291,324

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—269 **13 Claims**

1. An apparatus for separating foreign matter from a hot gas and transferring heat from the gas to a fluid comprising: first means having a continuous uninterrupted fluid impervious heat conducting tubular wall surrounding a tubular passage, said wall having a gas inlet end and a gas outlet end aligned with the passage; second means located in the passage along the longitudinal length of the passage to direct gas and foreign matter flowing through said passage in a generally helical path extended from the gas inlet end to the gas outlet end thereof, said foreign matter entrained in the gas being collected on the inside surface of said wall, said collected foreign matter moving along said inside surface of said wall toward the gas outlet end; annular means fixed with respect to said tubular wall to collect foreign matter that moves from the outlet end and permit clean gas to pass centrally thereof; cylindrical jacket means surrounding the tubular wall providing a chamber for accommodating a fluid located in engagement with said tubular wall whereby heat from said tubular wall is transferred to said fluid, said jacket means having opposite ends secured to



the first means adjacent the gas inlet and the tubular wall adjacent the gas outlet, spiral fin means surrounding and secured to the heat conducting tubular wall, said spiral fin means extended the length of said chamber and spaced from the jacket means providing said chamber with a spiral passage for carrying fluid and directing the flow of fluid around and along the length of the tubular wall whereby the tubular wall is cooled and the temperature of the gas in the passage adjacent the inside surface of the tubular wall is lowered to enhance condensation of gases into liquids which collect on said inside surface of the tubular wall, means for supplying fluid to one end of said chamber, and means for carrying fluid from the other end of said chamber to a desired location.

4,382,808

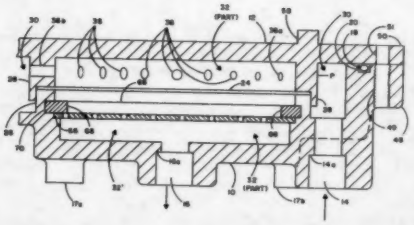
ASSEMBLY FOR HOLDING A FILTER

William D. Van Wormer, Jr., Yorba Linda; Stephen A. Gniewek, Glendora, and David L. Schlotterbeck, Brea, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 26, 1981, Ser. No. 277,456

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—418 **14 Claims**



1. In an assembly for holding a filter element which is adapted to remove particulate matter from a gas that flows therethrough, said assembly having a housing including first and second generally disc-shaped housing sections, and an inlet and outlet for connection to a source of a gas to be filtered, the improvement comprising:

(a) means for fastening said housing sections together to form a closed housing,

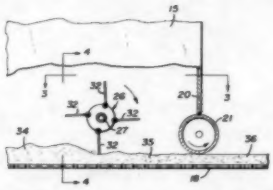
(b) an annular wall extending between and generally perpendicular to the first and second housing sections, said wall dividing the interior of the housing into a first, generally annular outer chamber open to the inlet and a second, generally cylindrical inner chamber open to the outlet,
(c) means defining a plurality of openings through said wall and spaced about the periphery thereof whereby gas flowing from said inlet to said outlet enters said inner chamber from a plurality of different directions, and
(d) means for mounting a filter element within the housing at a location between said outlet and said openings.

4,382,809

METHOD AND APPARATUS FOR THE PRODUCTION OF MINERAL FIBER FELTS HAVING FIBER-LEVELING DEVICE

William F. Porter, Lake Zurich, Ill.; Shirley J. Schwab, Tacoma, and Karl E. Schneider, Auburn, both of Wash., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 21, 1981, Ser. No. 333,208
Int. Cl.³ C03B 37/01
U.S. Cl. 65—4.4 **8 Claims**



8. A method for forming mineral fiber felts of uniform thickness and density which comprises melting mineral fiber-forming material, forming fibers from said material, depositing said fibers on a moving foraminous conveyor surface having vacuum creating means provided for drawing said fibers to said conveyor surface, brushing rearwardly the excess of mineral fibers on said conveyor above a predetermined height above the conveyor surface, to render the height of said preformed layer uniform, and passing said preformed and brushed layer under a compression roller to establish the final thickness of said felt.

4,382,810

PROGRAMMABLE SPEED CONTROLLER

Charles L. Wood, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 8, 1981, Ser. No. 281,565
Int. Cl.³ C03B 9/40
U.S. Cl. 65—29 **21 Claims**

1. A glassware forming machine system having a plurality of machine sections, each section having an associated section controller responsive to a timing signal for controlling sequential functions of its associated section and responsive to a reference signal for beginning each repetitive cycle of said sequential functions at a desired relative phase angle therewith and mechanisms performing operations common to said individual sections comprising:

first means providing values for a plurality of parameters;

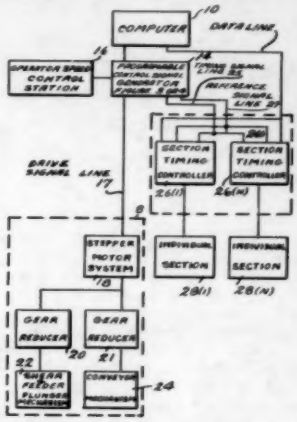
second means for providing an independently generated pulse train and for deriving a variable rate, pulse drive signal, said timing signal, and said reference signal from said independently generated pulse train, said drive, timing, and reference signals having mutually coordinated frequency and phase as determined by said parameter values; and

a digitally responsive motor to drive said section mechanisms at a variable speed determined from the pulse drive signal generated by said second means, said section sequence and offset being determined from said timing and reference signals.

8. A method for electronically controlling the drive speed of a plural sectioned machine, said drive being digitally responsive, each section thereof performing sequential timed functions in repeating cycles and operating in a phased relationship relative to other sections; said method comprising the steps of:

generating a base pulse train and from said base pulse train three variable rate pulse trains, each such variable rate pulse train being related to the others,

the first pulse train having a repetition rate that is derived from the base pulse train, the desired time per cycle and the number of pulses per rotation of the drive, the second pulse train having a repetition rate that is derived from the base pulse rate, the desired time per cycle and the number of control intervals in each cycle, and the third pulse train having a repetition rate that is derived from the base pulse rate and the desired time per cycle,



controlling motor speed by a first pulse train,

controlling said timed functions relative to a second pulse train, and

controlling said phased relationship relative to a third pulse train.

4,382,811

METHOD OF PRODUCING PROTECTIVE COATINGS ON METAL PARTS TO BE USED IN CONTACT WITH MOLTEN GLASS

Paul Lüscher, Lausanne, and Hans-Theo Steine, Chavannes, both of Switzerland, assignors to Castolin S.A., Saint-Sulpice, Switzerland

Filed Mar. 25, 1981, Ser. No. 247,246
Claims priority, application Switzerland, Mar. 27, 1980, 2400/80
Int. Cl.³ B05D 1/06
U.S. Cl. 65—374.11 **6 Claims**

4. A glass-making machine part having a surface coating thereon, said part being employed as an element in the glass-making industry, wherein said coated surface is used in contact with molten glass, said coating being formed of a thermally bonded layer consisting essentially of at least about 60% by weight of sub-stoichiometric chromium sesquioxide, and optionally 0 to about 40% by weight of a nickel-base alloy and 0 to about 20% by weight of at least one metal oxide, said optional material when present making up substantially the balance.

4,382,812
HERBICIDAL COMPOSITIONS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachihana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

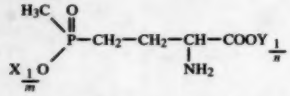
Division of Ser. No. 971,636, Dec. 20, 1978, Pat. No. 4,265,654. This application Aug. 20, 1979, Ser. No. 68,185

Claims priority, application Japan, Dec. 28, 1977, 52-157421; Dec. 28, 1977, 52-157422; Dec. 29, 1977, 52-158932; Mar. 30, 1978, 53-36059

Int. Cl.³ A01N *57/12*

U.S. Cl. 71—86 **9 Claims**

1. A herbicidal composition for controlling perennial weeds and brush which comprises a component (i) which is a compound of the formula



wherein X and Y are the same or different and each represents a hydrogen atom, a mono- or divalent metal atom, ammonium, a mono-, di- or tri-lower alkylammonium, a mono-, di- or tri-ethanolammonium or a mono-, di- or tri-lower alkenylammonium, and

m and n represent valencies of X and Y, respectively or an acid-addition salt thereof, and a component (ii) which comprises a herbicide or synergist selected from the group consisting of choline salt of maleic hydrazide, choline or a salt thereof, and diethylamine or a salt thereof; in a ratio by weight of said component (i) to said component (ii) of from 1:0.4 to 1:20.

4,382,813
ENCAPSULATION BY ENTRAPMENT WITHIN STARCH ADDUCT MATRIX

Baruch S. Shasha, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 30, 1980, Ser. No. 202,396

Int. Cl.³ A01N *43/00, 25/28;* A61K *9/26;* B01J *13/02*

U.S. Cl. 71—88 **11 Claims**

1. A method of encapsulating a water-insoluble, chemical biological agent comprising the steps of:

a. preparing a dispersion of a suitable chemical biological agent in a matrix-forming material comprising an aqueous paste of a starchcontaining material (SCM) alkoxide, wherein said paste has a solids concentration of SCM alkoxide of from about 6-20%, and wherein the relative amount of said SCM alkoxide with respect to said biological agent is sufficient to entrap said agent within a matrix of said SCM;

b. reacting from a single phase said SCM alkoxide with a suitable bivalent cation selected from the group consisting of calcium, barium, and strontium to form a continuous insolubilized matrix having entrapped therein discontinuous domains of said agent; and

c. recovering said entrapped chemical biological agent.

3. A method as described in claim 1 wherein the suitable chemical biological agent is S-ethyl dipropylcarbamothioate, S-propyl dipropylcarbamothioate, S-propyl butylethylcarbamothioate, S-ethyl cyclohexylethylcarbamothioate, S-ethyl bis(2-methylpropyl)-carbamothioate, S-ethyl hexahydro-1-H-azepine-1-carbothioate, S-(2,3,3-trichloro-2-propenyl)bis(1-methylethyl)carbamothioate, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl) benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl) benzenamine, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl) acetamide, 2,4-dichlorophenoxyacetic acid, propylene glycol butyl ether, 2,6-dichlorobenzonitrile, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-1-H-isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(1,1,2,2-tetrachloroethyl) thio]-1-H-isoindole-1,3(2H)-dione, N-[[(4-chlorophenyl) amino] carbonyl]-2,6-difluorobenzamide, 1,1'-(2,2,2-trichloroethylidene) bis(4-chlorobenzene), O,O-diethyl O-6-methyl-2-(1-methylethyl)-4-pyrimidinyl phosphorothioate, O-ethyl-S-phenyl ethylphosphorodithioate, or 1,2-dibromo-3-chloropropane.

4,382,814
HERBICIDAL DERIVATIVES OF 5-PHENOXY-2-NITROFURAN-3-CARBOXYLIC ACID

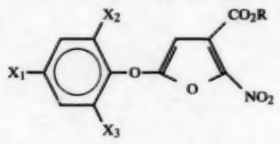
James J. Steffens, Yardley, Pa., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 27, 1981, Ser. No. 286,931

Int. Cl.³ A01N *43/08;* C07D *307/68*

U.S. Cl. 71—88 **5 Claims**

1. A herbicidal compound of the formula



where

(i) R is a C_1 to C_5 alkyl which is unsubstituted or substituted with at least one substituent selected from the group consisting of hydroxy, alkoxy, halo alkythio, and alkoxycarbonyl;

(ii) X_1 and X_2 are the same or different and are selected from the group consisting of halo, nitro, cyano, and trihalomethyl; and

(iii) X_3 is selected from the group consisting of hydrogen, halo, nitro, cyano, and trihalomethyl.

4,382,815
5-[2-CHLORO-4-(TRIFLUOROMETHYL)PHENOXY]-2-NITROBENZOYL DERIVATIVES OF IMINO-DITHIOLANES

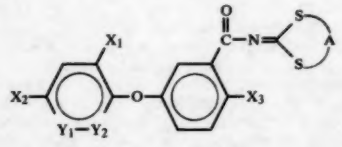
Stanley T. D. Gough, Whitehouse Station, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 27, 1981, Ser. No. 287,349

Int. Cl.³ A01N *43/28, 43/32;* C07D *339/06, 339/08*

U.S. Cl. 71—90 **6 Claims**

1. A herbicidal compound of the formula



(I)

where:

(i) A is an alkylene group having 1 or 2 ring carbon atoms which may further be substituted with one or more alkyl groups having 1 to 4 carbon atoms;

(ii) Y_1 is N or C—H;

(iii) Y_2 is N or C—X_4, provided that Y_2 is not C—X_4 when Y_1 is N;

(iv) X_1, X_2 and X_3 are the same or different and are halogen, polyhaloalkyl, NO_2, CN, C_1 to C_4 alkyl, SO_2 alkyl of 1 to 4 carbon atoms, SO_2NH_2, NO, and COO alkyl of 2 to 5 carbon atoms; and

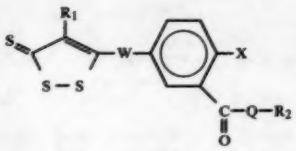
(v) X_4 is hydrogen or one of the groups specified in part (iv) above with respect to X_1, X_2 and X_3.

4,382,816
HERBICIDAL TRITHIONE DERIVATIVES OF BENZOIC ACID

James T. Bahr, Hopewell, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 27, 1981, Ser. No. 287,442
Int. Cl.³ A01N *43/32*; C07D *339/04*
U.S. Cl. 71—90 5 Claims

1. A herbicidal compound and the salts thereof, having the following formula:



(I)

where:

(i) W is O or S;

(ii) Q is selected from the group consisting of O, S, and NR_3; and;

(iii) X is halogen, polyhaloalkyl, NO_2, CN, alkyl, SO_2 alkyl, SO_2NH_2, NO, COO alkyl and COOH;

(iv) R_1 is H or a hydrocarbyl of 1 to 12 carbon atoms;

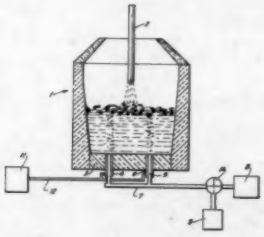
(v) R_2 is selected from the group consisting of H, hydrocarbyl of 1 to 12 carbons, and, when Q is NR_3, SO_2 alkyl C_1 to C_4; and

(vi) R_3 is selected from the group consisting of H, hydrocarbyl of 1 to 12 carbon atoms and when R_2 is SO_2 alkyl C_1 to C_4, R_3 is selected from the group consisting of Cl, CN, CO_2 alkyl C_1 to C_5 and $SCCl_3$.

4,382,817
PROCESS FOR PERIODICALLY AND PNEUMATICALLY STIRRING A BATH OF MOLTEN METAL

Pierre Vayssiere, Metz, and Jean-Claude Grosjean, Semecourt, both of France, assignors to Institute de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Jan. 2, 1981, Ser. No. 222,513
Claims priority, application France, Jan. 2, 1980, 80 00083
Int. Cl.³ C21C *5/34*
U.S. Cl. 75—59 13 Claims



1. In a metallurgical process in which a bath of molten metal has to be periodically stirred by introducing an inert gas through injection means below the surface of the bath, the steps of feeding, during a period in which no stirring of the bath by introducing an inert gas through injection means below the surface of the bath is carried out, a fluid in gaseous state through said injection means into the bath to prevent blocking of the injection means by the metal; and feeding, at the end of the period at which a fluid in gaseous is introduced through said injection means, a fluid in liquid state which will vaporize upon contact with the molten metal through said injection means into the bath to stirr the latter.

4,382,818
METHOD OF MAKING SINTERED POWDER ALLOY COMPACTS

Stanislaw Mocarski, Windsor, Canada, assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 638,783, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 535,527, Dec. 23, 1974, abandoned, and Ser. No. 403,240, Oct. 3, 1973, abandoned. This application Aug. 31, 1978, Ser. No. 938,675
Int. Cl.³ B22F *1/02, 3/16*
U.S. Cl. 419—11 18 Claims

1. A method of establishing alloying between solid and liquid phases of a powder mixture, comprising:

(a) uniformly blending an iron based powder, devoid of alloying ingredients and having less than 1% impurities, with a prealloyed non-iron based additive powder devoid of alloyed carbon to form a mixture, said additive powder consisting of at least two elements, but up to all elements selected from the group consisting of manganese, molybdenum, nickel, chromium, copper and iron, molybdenum being in the range of 5–15% by weight when selected along with the absence of copper, said elements being selected and balanced to provide in step (c) a span of melting temperatures for said admixture of elements of no greater than 350° F. and the admixture having a liquidus temperature of between 1900° F.–2250° F., said additive powder being preset in an amount of 0.25–6% of said mixture,

(b) adding a predetermined amount of graphite powder to said mixture to render 0.81% carbon or less and to render a predetermined hardenability response upon heating in step (c), and

(c) heating said mixture to a predetermined temperature and for a period of time to allow the additive powder to completely form a liquid phase which readily diffuses along the particle boundaries and into the matrix of said iron powder thereby reducing the maximum diffusion distance to one particle radius or less and provides for a homogeneous microstructure.

4,382,819
DRAWING AND COLORING ELEMENT IN FORM OF BLACKBOARD-CHALK-LIKE STICK FOR PRODUCING PICTURES THAT CAN BE FIXED THROUGH APPLICATION OF HEAT

Theodor Berghofer, Maximilianstr. 14, Wels, Austria

Filed Dec. 11, 1979, Ser. No. 102,584
Int. Cl.³ C09D *13/00*
U.S. Cl. 106—19 11 Claims

1. In a drawing and coloring element in the form of a stick for producing pictures on a substrate, consisting of a fixing-effective amount of a binder made of at least one initially fusible synthetic resin which is thermoplastic or thermosetting and which is selected from the group consisting of an acrylic resin, epoxy resin, polyester resin, polyurethane resin and mixtures thereof, and a coloring-effective amount of at least one inorganic color-producing pigment, organic color-producing pigment or mixture thereof and optionally dyes soluble in the synthetic resin, as well as additives customary in the thermal processing of thermoplastic or thermosetting synthetic resins, the improvement wherein

the drawing and coloring element is a friable and chalk-like stick consisting of a compacted mixture of powdered components cold consolidated in a press through application of pressure below the fusing or hardening temperature of said resin, said color-producing pigment being present in such mixture in an amount of 5–50% by weight

in relation to the total amount of the resin-type binder and said pigment.

3. A friable, chalk-like drawing and coloring stick for producing pictures on a substrate which pictures can be fixed and hardened on the substrate through the application of heat, comprising

a binder of at least one fusible thermosettable synthetic resin in powder form selected from the group consisting of an acrylic resin, epoxy resin, polyester resin, polyurethane resin and mixtures thereof, and

at least one color-producing pigment in powder form, said pigment being present in a coloring-effective amount comprising 5–50% by weight of the total amount of said synthetic resin binder and said pigment;

said powdered resin binder and said powdered color producing pigment being consolidated by cold pressing in a press through the application of pressure below the fusing and hardening temperature of said resin.

5. A method of making a chalk type stick for drawing and coloring to produce pictures of a permanent nature by the application of heat, comprising mixing at least one fusible thermosettable synthetic resin in powder form with a coloring pigment in powder form, the relative quantities thereof being 5–50% by weight pigment and 95–50% by weight thermosettable resin; forming said powder mixture into a stick by cold pressing in a press under pressure on the order of about 90 kp/cm^2 and at a temperature below the fusing and hardening temperature of said thermosettable resin.

4,382,820

STRUCTURAL COMPOSITION FOR MACHINE TOOL BODIES AND MEMBERS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 27, 1981, Ser. No. 238,667

Claims priority, application Japan, Feb. 27, 1980, 55-22770; Jun. 9, 1980, 55-77463

Int. Cl.³ C04B 7/02

U.S. Cl. 106—90 **8 Claims**

1. A method of making a structural member for a machine tool which comprises the steps of:

(a) dispersing in a mass of a hardenable nonmetallic substance, a multiplicity of discrete solid objects forming reinforcing elements and in an amount comprising 0.5 to 30% by weight of the resulting composition;

(b) shaping said composition into a configuration corresponding to the shape of the structural member and including at least a machine tool bed and a machine tool column extending upwardly from said bed; and

(c) hardening the mass of the shaped composition to form the structural member as a rigid body with said elements distributed throughout said column and bed.

4,382,821

FILLING MATERIALS FOR COMMUNICATIONS CABLE

Lawrence E. Davis, and Naren I. Patel, both of Hickory, N.C., assignors to Siecor Corporation, Hickory, N.C.

Division of Ser. No. 146,339, May 2, 1980, Pat. No. 4,333,706, which is a continuation-in-part of Ser. No. 106,866, Dec. 26, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,483

Int. Cl.³ C08K 3/40; C08L 21/06, 91/06

U.S. Cl. 106—272 **4 Claims**

1. A composition of matter comprising a mixture of 62 to 95 weight percent petrolatum, 1 to 8 weight percent of low molecular weight polyethylene having a molecular weight up to 3500 and 1 to 35 weight percent inorganic hollow microspheres having a particle density from 0.12 to 0.6 gms/cm^3 and diameters up to 325 microns, said polyethylene being dissolved in said petrolatum.

4,382,822

SYNTHETIC RHOMBOHEDRAL MAGNETITE PIGMENT

Ernest Mayer, Easton, Pa., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 75,628, Sep. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 10,647, Feb. 9, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,461

Int. Cl.³ C01G 49/08

U.S. Cl. 106—304 **2 Claims**

1. A synthetic rhombohedral magnetite having 60 degree angles, a tinting strength Y value not greater than about 15.78, a BET surface area of greater than about 13 m^2/g and an average particle size of less than about 0.08 microns as measured along the long axis.

4,382,823

PROCESS FOR THE PURIFICATION OF SUGAR SYRUPS

Geir V. Gudnason, Atlanta, Ga., assignor to The Coca Cola Company, Atlanta, Ga.

Filed Sep. 24, 1981, Ser. No. 305,307

Int. Cl.³ C13D 3/00, 3/02

U.S. Cl. 127—57 **19 Claims**

1. A process for purifying sugar syrup, which comprises:

(a) combining an impure sugar syrup of about 50° to about 65° Brix with a flocculating agent selected from lime in combination with a phosphate ion source or with aluminum sulfate to form a primary floc in the syrup, wherein the amount of agent added forms an amount of primary floc sufficient to remove a substantial quantity of impurities from the syrup and adjusts the pH of the syrup to about 6 to 8, and wherein the syrup is maintained at a temperature of from a temperature sufficient for floc formation up to about 90° C.;

(b) removing an aliquot from the syrup before or after the syrup is combined with the flocculating agent in step (a), the aliquot being from about 5% to about 15% by volume of the syrup;

(c) diluting the aliquot with an amount of water sufficient to adjust the Brix of the aliquot to about 35° to 45° and form a diluted aliquot;

(d) aerating the diluted aliquot to form a super-aerated aliquot, wherein the diluted aliquot is maintained at a temperature of from about 25° C. up to about 90° C.;

(e) adding the super-aerated aliquot to the primary flocculated syrup and mixing to form an aerated syrup;

(f) dispersing in the aerated syrup by substantially non-turbulent agitation for up to about 180 seconds, an amount of 0.05% to 0.3% aqueous polyacylamide electrolyte solution sufficient to form a secondary flotation floc in the aerated syrup;

(g) allowing the secondary floc in the aerated syrup to float and form a floating scum and a substantially purified sugar syrup;

(h) separating the scum and the purified syrup.

4,382,824

METHOD FOR DISINFECTING AND CLEANING CONTACT LENSES

Frank E. Halleck, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Continuation-in-part of Ser. No. 187,760, Sep. 16, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,937

Int. Cl.³ B08B 3/12

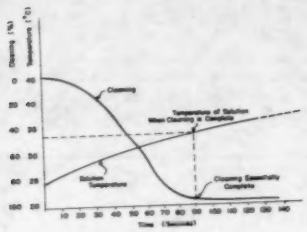
U.S. Cl. 134—1 **2 Claims**

1. A process for cleaning and disinfecting a soiled contact lens in a single unit operation comprising the steps of:

immersing said lens in a cavitation-supporting, saline solution, said solution being at ambient temperature;

subjecting said lens to ultrasonic energy transmitted through said solution at a frequency in the range of 62 to 72 kHz

and an intensity in the range of 0.8 to 2.0 watts per ml. of solution present, said ultrasonic energy producing cavitation in said solution and dislodging substantially all of said soil from said lens before the combined elapsed time and temperature conditions within said solution produce any substantial protein denaturation on said lens; and



continuing to transmit said ultrasonic energy through said solution at said frequency and intensity ranges to produce a temperature in said solution not to exceed about 65° C. but sufficient for a total elapsed period of said ultrasonic energy transmission, not to exceed about 20 minutes, to effect disinfection of said lens.

4,382,825

ALKALINE CLEANER FOR FERROUS-BASED METAL SURFACES

Newton W. McCready, Newtown Square, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jul. 8, 1981, Ser. No. 281,269

Int. Cl.³ C23G 1/20; C11D 3/075, 3/08, 3/10

U.S. Cl. 134—2 **14 Claims**

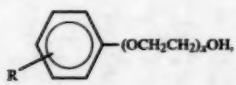
1. An alkaline cleaner for cleaning ferrous-based metal surfaces comprising:

(a) from about 20 to about 70% by weight of either an alkali metal metasilicate, an alkali metal orthosilicate, or a combination thereof;

(b) from 0 to about 45% by weight of a substantially anhydrous alkali metal carbonate;

(c) from about 5 to about 30% by weight of at least one of a substantially anhydrous (i) alkali metal tripolyphosphate, (ii) tetra alkali metal pyrophosphate, and (iii) alkali metal hexametaphosphate;

(d) from about 2 to about 15% by weight of a surfactant of the formula



wherein R is a saturated C_8–C_{12} alkyl group, x is in the range of 8 to 12, and the surfactant has a cloud point in the range of about 45° to about 65° C.;

(e) from about 2 to about 20% by weight of a polyethoxy secondary alcohol of the formula

$$C_{12\text{-}14}H_{25\text{-}29}O(CH_2CH_2O)_x[CH_2CH_2O/CH_2CH(CH_3)O]_yCH_2CH(CH_3)OH,$$

wherein x is from about 5 to about 9, y is from about 1 to about 5, and the cloud point is in the range of about 35° to about 45° C.; wherein the sum of (b) and (c) is not less than about 15% by weight, and wherein an aqueous solution containing from about 10 to about 20 grams/liter of said alkaline cleaner in water has a pH in the range of from about 12.2 to about 12.8.

4,382,826

METHOD OF MAKING MIS-FIELD EFFECT TRANSISTOR HAVING A SHORT CHANNEL LENGTH

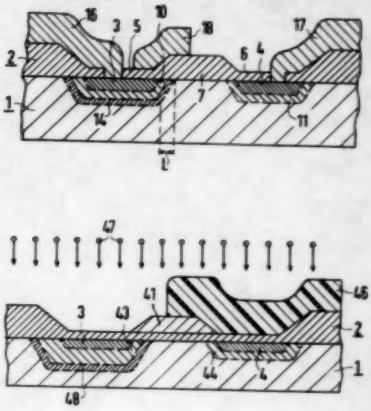
Hans-Jörg Pfleiderer, Zorneding, and Dietrich Widmann, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 8,245, Jan. 2, 1979, Pat. No. 4,291,321. This application Mar. 30, 1981, Ser. No. 248,685

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802838

Int. Cl.³ B01J 17/00

U.S. Cl. 148—1.5 **10 Claims**



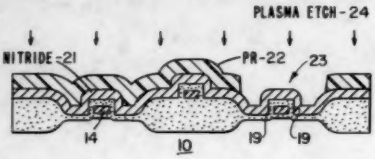
1. A method for producing an MIS field effect transistor exhibiting a short channel length and having source and drain zones contacted by respective electrodes, and an insulating layer overlying an intermediate gate zone provided thereon with a gate-electrode, comprising the steps of: forming by known steps on a semiconductor member laterally spaced source and drain zones of a first conductivity type contacted by respective electrodes, and an insulating layer intermediate the source and drain zones upon which layer is disposed a gate electrode layer, with the source and drain zones extending from the contact surface into the semiconductor member; prior to the mounting of said source and drain electrodes, implanting into the semiconductor member dopant particles of the first conductivity type, utilizing as an implantation mask said insulating layer on said semiconductor member having edges overlapping the source zone and the drain zone, which edges have a beveled or wedge-shaped configuration, and so selecting the implantation energy and the implantation dose of such doping particles that a concentration maximum of the doping particles of the first conductivity type extends underneath the source and drain zones and therefrom obliquely to the substrate surface underneath the wedge-shaped edges of the implantation mask, and the zones formed thereby exhibiting a weaker doping than the source and drain zones per se; and implanting particles of the second conductivity type, utilizing the same implantation mask only in the area of the source zone, and so selecting the implantation energy and implantation dose that a concentration maximum of the doping particles of the second conductivity type extends under the concentration maximum of the doping particles of the first conductivity type and also extends obliquely to the semiconductor surface underneath the wedge-shaped edges of the implantation mask.

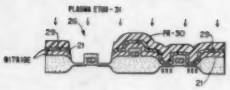
4,382,827

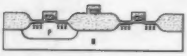
SILICON NITRIDE S/D ION IMPLANT MASK IN CMOS DEVICE FABRICATION

Roberto Romano-Moran, Centerville, and Ronald W. Brower, Kettering, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 27, 1981, Ser. No. 258,189
Int. Cl.³ H01L 21/265, 7/54
U.S. Cl. 148—1.5 5 Claims







1. An improved process for forming S/D regions during the fabrication of CMOS devices, in which the substrate is defined into p and n-channel FET regions, and p and n-channel FET gate electrodes are formed over a portion of the gate oxide covering said FET regions, wherein the improvement comprises the steps of:

forming a layer of dielectric material to protect such gate electrodes from implantation materials;

depositing a first layer of high temperature material to a thickness substantially impermeable to an implantation with a first impurity type material;

removing said first layer of high temperature material in a first FET region of said substrate;

subjecting said substrate to implantation using said first impurity type material;

depositing a second layer of high temperature material to a thickness substantially impermeable to an implantation with a second impurity type material;

removing said first and second layers of high temperature material in a second FET region;

subjecting said substrate to an implantation using said second impurity type materials; and

removing residual first and second layers of high temperature material from said substrate with an etchant material, said etchant material preferentially etching said high temperature material at a significantly greater rate than said dielectric material.

4,382,828

CHROMIUM CAST IRON AND METHOD OF PRODUCING SAME

Ivo Henych, Schaffhausen, Switzerland, assignor to George Fischer Limited, Switzerland

Filed Nov. 18, 1980, Ser. No. 207,997
Claims priority, application Switzerland, Nov. 19, 1979, 10291/79
Int. Cl.³ C21D 5/00, 5/04
U.S. Cl. 148—3 8 Claims

1. The process for the production of cast parts with high impact resistance and abrasion resistance made of white, at least predominantly austenitic, chromium cast iron which has alloying components of:

Carbon:	2.2 to 3.6%	by weight
Chromium:	8.0 to 30.0%	by weight
Molybdenum:	0.0 to 3.0%	by weight
Nickel:	0.0 to 6.0%	by weight
Manganese:	0.0 to 2.0%	by weight
Copper:	0.0 to 3.0%	by weight
Vanadium:	0.0 to 1.5%	by weight

the cast part having a structure free of pearlite and secondary carbide precipitations,

wherein the alloy is cast in a mold and allowed to solidify,

the resultant casting is removed from the mold at a temperature above the A_c3 temperature of the alloy;

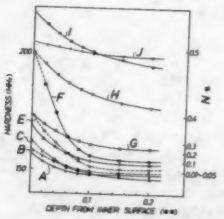
and the resultant casting is cooled at a rate sufficiently rapid to prevent the formation of pearlite and secondary carbide precipitations.

4,382,829

AUSTENITE ALLOY TUBES HAVING EXCELLENT HIGH TEMPERATURE VAPOR OXIDATION RESISTANT PROPERTY

Takahiro Kanero, and Yusuke Minami, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,035
Claims priority, application Japan, Dec. 5, 1979, 54-156918
Int. Cl.³ C22C 38/40
U.S. Cl. 148—39 6 Claims



1. An austenite alloy tube having excellent high temperature steam oxidation resistant properties having a composition comprising 15 to 26% by weight of chromium, 8 to 35% nickel, silicon in an amount up to 1%, manganese in an amount up to 2%, said tube having an average nitrogen content of less than 0.25%, and having a nitrogen content of 0.25% or higher on the inner surface of said tube, said inner surface having been nitrided to provide said higher nitrogen content, and the balance of said tube being iron and impurities.

4,382,830

METHOD OF CONSTRUCTING TIRE WITH IDENTIFICATION TAG THEREFOR

Alan E. Cohn, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 205,139, Nov. 10, 1980, Pat. No. 4,351,548.
This application Oct. 23, 1981, Ser. No. 314,270
Int. Cl.³ B65C 3/00; B29H 17/00; G01D 21/00
U.S. Cl. 156—64 4 Claims

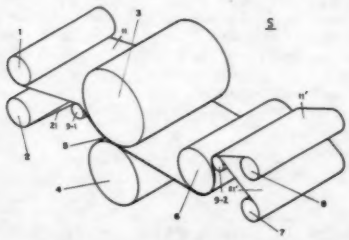
1. In a method of constructing a pneumatic or semi-pneumatic tire by the process of building its elements together followed by shaping and curing the construction where at least one of its elements is comprised of a heat-curable rubber composition, the improvement in which at least one of said rubber composition elements is identified by a paper identification tag releasably attached to said element and removed therefrom prior to building the element into the tire construction, said tag having a surface area of one of its two sides in the range of about 2 to about 30, preferably about 5 to about 16 square inches (in^2) and having an information-providing ink composition thereon which covers about 10 to about 50, preferably about 20 to about 40 percent of the surface area of at least one side of said tag where said ink composition contains about 5 to about 25, preferably about 8 to about 15 weight percent, based on the total ink composition, of a heat activatible blowing agent.

4,382,831

METALLIZATION OF SUPPORT MEMBERS

Philip J. Clough, Gorham, Me.; Roswell E. Hubbard, Wayland, Mass.; John F. McDermott, Framingham, Mass., and Richard G. Miekka, Sudbury, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Oct. 21, 1981, Ser. No. 313,526
Int. Cl.³ B32B 35/00; B44C 1/14, 3/02
U.S. Cl. 156—94 20 Claims



1. The method of metallizing a support member which comprises the steps of:

(1) providing a support member;

(2) providing a metallized plastic sheet with a thermoplastic layer comprising a water-based adhesive thereon;

(3) forming a composite of the support member and the metallized sheet, with said thermoplastic layer therebetween;

(4) rendering said thermoplastic layer flowable; and

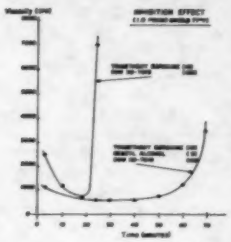
(5) rendering said thermoplastic layer nonflowable in said composite and stripping said plastic sheet therefrom to leave said support member with said metallic layer adhered thereto by said thermoplastic layer.

4,382,832

PROCESS FOR PREPARING LOW HAZE, HIGH TEMPERATURE-RESISTANT LAMINATES

John Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 232,054, Feb. 5, 1981, Pat. No. 4,343,928, which is a continuation-in-part of Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, each is a continuation-in-part of Ser. No. 070,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Sep. 28, 1981, Ser. No. 306,261
The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.
Int. Cl.³ B32B 17/06; C08G 59/40
U.S. Cl. 156—99 32 Claims

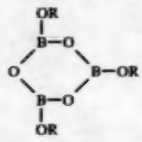


1. A process for preparing a transparent, low haze, high heat-resistant laminate, comprising the steps of:

forming a high heat-resistant layer between transparent protective layers so that a transparent protective layer is located on either side of said heat-resistant layer, at least one of said protective layers being an as-cast acrylic layer, and curing said heat-resistant layer at a temperature of from about 60° F. to about 250° F.,

wherein said high heat-resistant layer has from about 80 parts to about 100 parts by weight of an epoxy resin, said epoxy resin containing at least 25 percent by weight of novolac therein, and

from about 5 to about 30 parts by weight of a boroxine compound having the formula



wherein R is a group having from 1 to 18 carbon atoms, and from about 1 part to about 10 parts by weight of a phenyl substituted alkyl alcohol, said alkyl alcohol having from 1 to 10 carbon atoms.

4,382,833

VACUUM LAMINATION FIXTURE

Peter J. Coyle, Oaklyn, and Marvin S. Crouthamel, Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

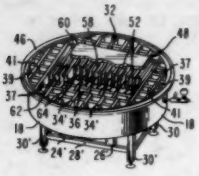
Filed Aug. 25, 1981, Ser. No. 296,227
Int. Cl.³ B32B 31/20
U.S. Cl. 156—382 11 Claims

1. In an apparatus for laminating a plurality of elements including two sheets and a substance between them which softens when heated into a planar structure, said apparatus including upper and lower housing members, an intermediate member including a flexible portion, said members forming upper and lower sealed chambers, means for selectively forming a vacuum in each of said chambers, said intermediate mem-

ber compressing said elements against said lower housing member when the lower chamber has a pressure lower than that of the upper chamber, the improvement comprising:

element support means against which said elements bear during the time they are being compressed including a plurality of rib members supported at lower edges thereof at a like plurality of spaced locations by said lower housing member and terminating at their upper edges in a given element support plane; and

element heater means between adjacent ones of said rib members intermediate said upper and lower edges for heating the structure being laminated to a temperature sufficiently high to soften the substance between the two sheets.



4,382,834

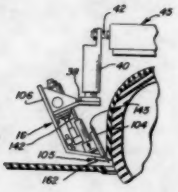
ROTATING CUTTER AND STITCHER FOR SEVERING MATERIAL FROM A BODY

Ronald L. Satzler, Princeville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 245,227, Jun. 16, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,470

Int. Cl.³ B29C *17/04;* **B29H** *15/00*

U.S. Cl. 156—382 **12 Claims**



1. A cutting and stitching apparatus (16,18,20,22) for cutting and stitching an applied portion of a sheet of elastomeric material (32) to a core (30), said cutting and stitching apparatus comprising:

a rotatable carrier plate (24);

a cutter (104) supported by said carrier plate (24) and having a rotatably driven blade (140);

a stitcher (105) supported by said carrier plate (24) and having a freely rotatable roller (162);

actuator means (45,54) for moving said cutter (104) and said stitcher (105) toward and away from said core (30);

means (110) for moving said rotatably driven blade (140) of said cutter (104); and,

means (152) for rotating said blade (140).

4,382,835

COMPOSITE LABEL ARRANGING DEVICE

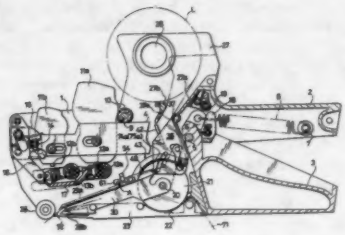
Yo Sato, Tokyo; Norio Abe, Kitagami; Suguru Kikuchi, Ezurikomura; Fumio Goto, Kitagami, and Akira Sugimoto, Koshijimachi, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed May 21, 1981, Ser. No. 265,914

Claims priority, application Japan, Jun. 6, 1980, 55-78103

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **18 Claims**



1. A label arranging device for use in a label printing and applying machine of the type which includes feed means for advancing a label strip along a feed path, the feed means including feed pins for engaging and raising up feed flaps formed on the label strip, a platen positioned along the feed path downstream from a position at which the feed pins engage the feed flaps, the platen being adapted to support a label of said label strip located at a printing position, a label printing device, including a type opposable to the platen, for engaging and imprinting a label located at the printing position, and a printing lever supporting the printing device, the platen and printing lever being movable relative to one another to permit the type to be moved to the platen and then separated therefrom, the label arranging device comprising:

a groove formed in the platen at an arranging position upstream of the printing position and corresponding to the location of one of the feed flaps when one of the labels of the label strip is located at the printing position;

a label arranging member movable between a first position wherein it is remote from said groove and a second position wherein it is located in said groove such that the label arranging member pushes the feed flap located at the arranging position into the groove and below the plane of the label strip in the area of the groove, the label arranging arranging member being moved from the first to the second position in response to the relative movement of the platen and the printing lever.

4,382,836

BI-DIRECTIONAL APPLICATOR HEAD

Ed Frank, Glenolden, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1980, Ser. No. 192,570

Int. Cl.³ B31F *1/00;* **B44C** *7/00;* **B32B** *31/18*

U.S. Cl. 156—459 **8 Claims**

1. A tape applicator head for applying tape from a tape supply in two opposing directions onto a working surface, which comprises:

mounting means;

dispensing means, mounted to the mounting means adjacent the working surface, which includes two spaced dispensing blocks between which the tape passes and which alternately engage the tape during movement of the head in the two opposing directions, for imparting a tension to the tape to draw the tape past the dispensing blocks onto the working surface;

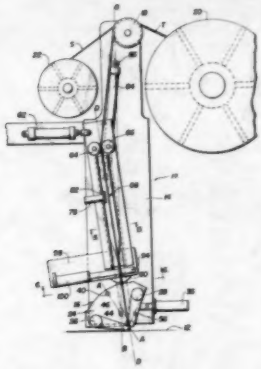
guide means, mounted to the mounting means between the tape supply and the dispensing means, for positioning the

tape and defining, with the dispensing means, a path of travel of the tape between the guide means and the working surface;

shearing means, through which the tape extends, said shearing means being positioned intermediate the guide means and the dispensing means, for engaging and shearing the tape;

feeder means, through which the tape extends, said feeder means being positioned intermediate the guide means and the shearing means, for engaging and moving the tape between the two dispensing blocks toward the working surface, the feeder means comprising:

a feeder assembly which includes two feeder elements disposed on opposite sides of the tape extending there-



through and engaging means, connected between the two feeder elements, for moving at least one of the two feeder elements between a disengaged position at which the two feeder elements are spaced from each other and from the tape extending therebetween, and an engaged position at which both feeder elements are engaged with opposite sides of the tape extending therebetween; and insertion means for moving the feeder assembly along the path of travel of the tape between a retracted position at which the feeder assembly is spaced from the shearing means intermediate the guide means and the shearing means and an extended position at which the two feeder elements of the feeder assembly extend through the shearing means in close proximity to the dispensing blocks.

4,382,837

EPITAXIAL CRYSTAL FABRICATION OF SiC:AlN

Richard F. Rutz, Cold Spring, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,145

Int. Cl.³ C30B *25/02*

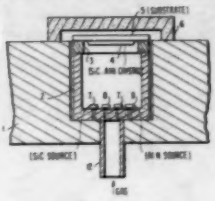
U.S. Cl. 156—610 **16 Claims**

1. A process for growing a crystal of $(SiC)_x(AlN)_{1-x}$ wherein x is about 0.2 to about 0.5, which comprises:

providing an Al_2O_3 substrate;

providing a first source for SiC and a second source for AlN in proximity to said substrate;

heating said first and second sources to the range of about 1900° to about 2020° C. in the presence of N_2+H_2 gas



flowing over said sources in the direction towards said substrate.

4,382,838

NOVEL SILICON CRYSTALS AND PROCESS FOR THEIR PREPARATION

Bernhard Authier, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 26, 1976, Ser. No. 652,359

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1975, 2508803

Int. Cl.³ C30B *11/14*

U.S. Cl. 156—616 R **8 Claims**

1. A method for producing a solar cell base material consisting essentially of a silicon crystal which is plate-like and semiconductive, having a columnar structure formed in the direction of the shortest axis of the plate-like silicon crystal, from monocrystalline zones having a preferential crystallographic orientation, comprising the steps of:

pouring a mass of molten silicon into an appropriately-shaped casting mold so that at least one of the two largest boundary surfaces of the melt which lie opposite one another is in contact with a surface of the casting mold, said molten mass being introduced into said mold under the influence of a specific temperature gradient by maintaining said surface of the mold at a maximum temperature of 1200° C., while exposing the opposite boundary surface of the melt to a temperature which is at least 200° C. to 1000° C. higher than the temperature of said surface of the casting mold but below the melting point of silicon, so that the melt slowly cools down and solidifies under the influence of said temperature gradient to form a cast product; and removing said cast product from the mold.

4,382,839

PROCESS FOR PRODUCING FERRITE SINGLE CRYSTALS

Michihiro Torii, Hamamatsu; Utsuo Kihara, Kosai; Hirohito Goto, Gyoda, and Isamu Sasaki, Kosai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 134,450, Mar. 27, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,946

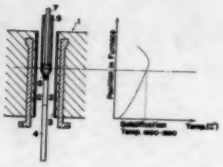
Claims priority, application Japan, Mar. 28, 1979, 54-36710

Int. Cl.³ C30B *11/02*

U.S. Cl. 156—616 R **8 Claims**

1. A process for producing ferrite single crystals comprising the steps of placing ferrite materials in a lower portion of a crucible, melting the ferrite material completely in a heating

zone of a furnace maintained above the solidification temperature of the ferrite to produce a liquid-phase zone of 4 to 15 cm in length, moving said lower portion of the crucible out of the heating zone of the furnace to cause the melted ferrite materials to crystallize progressively from a bottom of said crucible, simultaneously and continuously supplying a rod shaped ferrite



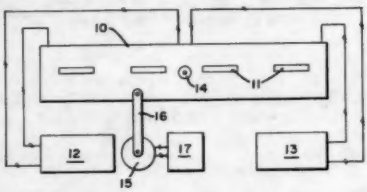
solid having a diameter substantially equal to one third the diameter of the crucible into said crucible while the melted ferrite materials are crystallizing with the depth of the liquid-phase zone of melted ferrite being maintained constant, said ferrite solid being substantially in equilibrium in composition to the liquid-phase zone.

4,382,840

HYDROTHERMAL CRYSTAL GROWING PROCESS AND APPARATUS

Bruce H. Chai, Bridgewater; Ernest Buehler, Chatham, and John J. Flynn, Millington, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 30, 1981, Ser. No. 230,075
Int. Cl.³ C30B 7/10
U.S. Cl. 156—623 R **21 Claims**



1. A process for growing single crystals of a metal orthophosphate selected from the group consisting of alpha-aluminum orthophosphate and alpha-gallium orthophosphate, comprising the steps of:

(a) suspending a seed crystal of the metal orthophosphate in a first chamber of a substantially horizontally-oriented pressure vessel, said first chamber being partitioned from at least one additional chamber so that a temperature gradient can be maintained and fluid can flow between the chambers,

(b) introducing into a second chamber of the vessel a quantity of coarse crystalline powder of the metal orthophosphate,

and then, sequentially,

(c) partially filling the vessel with concentrated phosphoric acid,

(d) sealing the vessel,

(e) heating the vessel to achieve a seed crystal temperature in the range from about 135° C. to 210° C. and a powder temperature about 5° C. to 30° C. lower,

(f) maintaining the temperatures in the vessel while rocking the vessel about a horizontal axis to raise first one chamber of the vessel and then another, whereby the seed crystal grows from an acid solution of the metal orthophosphate,

(g) cooling the vessel to near ambient temperature, and

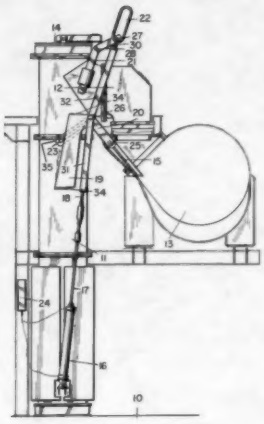
(h) recovering the resultant single crystal.

4,382,841

APPARATUS FOR OPERATING OFFTAKE AND MAIN VALVES

Theo Koddenberg, and Dieter Janssen, both of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 29, 1981, Ser. No. 316,075
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042792
Int. Cl.³ C10B 27/06, 29/00
U.S. Cl. 202—256 **9 Claims**



1. A coke oven gas apparatus for consecutive operation of a seal on a gas collection main conduit and a cover of a communicating gas offtake pipe, said gas offtake pipe having a vertical axis and having said cover at its top and also communicating through a transition element to a horizontally presented gas collection main conduit, the said seal being disposed to open or close the connection from said transition element to said gas collection main conduit, comprising

an extensible and retractable first shaft connected through a first pivot pin at its upper end to the bottom end of a second shaft;

said second shaft connected at its upper end to one end of a first bell crank arm which has a second pivot pin at its center and is connected to the said cover whereby pivotal movement of the said first bell crank arm will move the said cover from an open position to a closed position and vice versa, the other end of said first bell crank arm being weighted to urge the said cover by gravity into a closed position;

said first pivot pin being engaged in a slot in one arm of a second bell crank arm having its other arm secured to the said seal whereby movement of the said second bell crank arm about the said first pivot pin causes the said seal to open and close and vice versa; the connections being such that with the said first shaft in its extended, uppermost position, the said cover is closed and the said seal is open and with the said first shaft in its retracted, bottommost position, the said cover is open and the said seal is closed; said shafts, pivot pins and arms being arranged and constructed such that as the said first shaft extends from its lowermost position, said cover closes and thereafter said seal opens, and as the said first shaft retracts from its uppermost position, the said seal closes and thereafter the said cover opens.

4,382,842

COKE DISTRIBUTING APPARATUS IN A SMOKE HOOD

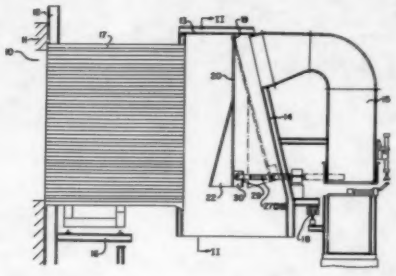
Hans-Jurgen Kwasnik, Herne; Hans-Gunter Piduch, Bochum, and Rolf Weiershausen, Dortmund, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 299,115

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034391

Int. Cl.³ C10B *33/14, 45/00*

U.S. Cl. 202—263 5 Claims



1. Apparatus to distribute a hot coke cake pushed from an oven chamber in a coke oven battery, said apparatus being in combination with a coke car, an oven chamber and a coke guide arranged to direct a hot coke cake from the oven chamber for passage into said coke car at the coke side of the oven chamber, said apparatus including a smoke collector hood having a roof at the coke discharge side of said coke guide generally above the path of travel by a coke cake passed therefrom, a distributor suspended from said smoke collector hood, said distributor including a front wall with metal sheets receding from a middle vertical edge spaced outwardly from said coke guide and facing toward the oven chamber to laterally deflect a coke cake passing from said coke guide beneath said hood, and means to pivotally support said distributor for moving away from the coke oven battery outwardly of the path of the coke cake.

4,382,843

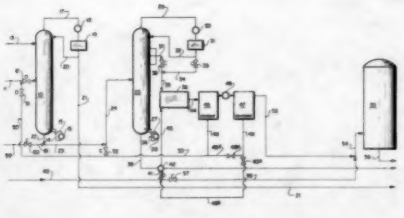
METHOD FOR PRODUCING GASOLINE-ALCOHOL FUELS

Cline Black, Placentia, Calif., assignor to Simulation Sciences, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 126,557, Mar. 3, 1980, abandoned. This application Nov. 7, 1980, Ser. No. 205,585

Int. Cl.³ B01D *3/36, 11/04*

U.S. Cl. 203—19 10 Claims



1. A method of preparing a gasoline-ethanol blend suitable as a fuel for internal combustion engines comprising:

(a) passing a feed consisting of a dilute aqueous ethanol solution to a distillation zone;

(b) heating said dilute aqueous ethanol solution in said distillation zone and recovering, as a top product, concentrated aqueous ethanol containing about 45 to 89 percent m ethanol, and heated water as a bottom product;

(c) passing a gasoline feed to a heating zone where it is heated;

(d) introducing said concentrated aqueous ethanol and heated gasoline into a mixing zone to form a gasoline-ethanol-water mixture having a temperature of about 60° to 110° C.;

(e) passing said heated gasoline-ethanol-water mixture to a first separation zone wherein the mixture separates into a first upper gasoline-ethanol phase and a first lower aqueous phase containing some ethanol;

(f) passing said gasoline-ethanol phase through a cooling zone wherein the temperature is lowered to the minimum temperature under which the gasoline-ethanol is to be used as a fuel and into a second separation zone maintained at said minimum temperature wherein said mixture separates into a second upper gasoline-ethanol phase and a second lower aqueous phase; and

(g) withdrawing said second gasoline-ethanol phase from said second separation zone as a final gasoline-ethanol fuel blend.

5. A method according to claim 1 wherein the first lower aqueous phase is recycled to the dilute aqueous ethanol feed to the distillation zone, and the second lower aqueous phase is recycled to the gasoline feed prior to entering the heating zone.

4,382,844

METHOD FOR HEATING ALUMINUM BATHS

Siegfried Birkle, Hoechstadt, and Klaus Stoeger, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,520

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138072

Int. Cl.³ C25D *17/06, 17/18*

U.S. Cl. 204—14 N 6 Claims

1. A method of heating an aprotic electrolyte bath contained in a tank for an aluminum electroplating system having anode and cathode elements in contact with said bath to a predetermined working temperature and for maintaining said temperature constant during the aluminization process comprising generating Joule's heat in said bath by immersing at least two electrodes in the electrolyte bath and charging said electrodes with pulse currents of alternating polarity and controlling the bath temperature by varying the clock ratio, amplitude, and/or frequency of the alternating current pulses.

4,382,845

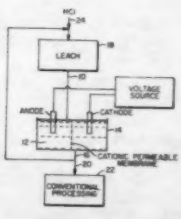
SELECTIVE ELECTROWINNING OF PALLADIUM

Gale L. Hubred, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1981, Ser. No. 291,607

Int. Cl.³ C25C *1/20*

U.S. Cl. 204—111 4 Claims



1. A process for selectively removing palladium from a

mixture containing more palladium by weight than platinum comprising:

forming a first solution in a leach tank, which contains at least 1 M hydrochloric acid, and said palladium and platinum;

contacting said first solution with a cathode, said cathode in a compartment in a cell separated from an anode by a cation permeable membrane, said anode in contact with a second solution consisting of at least 0.5 molar hydrochloric acid; and

passing electric current across said anode and cathode until the concentration of palladium and platinum is substantially equal in said first solution, when said concentrations are measured in grams of metal per liter.

4,382,846

SIMULTANEOUS PRODUCTION OF HYDROGEN AND OXYGEN FROM WATER

Michael Gratzel, Corsy; John Kiwi, Preverenges; Kuppuswamy Kalyanasundaram, Chavannes, all of Switzerland, and John Philp, Longlevens, England, assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 184,460, Sep. 5, 1980. This application May 7, 1982, Ser. No. 375,913

Claims priority, application United Kingdom, Aug. 9, 1979, 7931252; Aug. 7, 1980, 8022340

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **30 Claims**

1. A unitary method for simultaneous production of hydrogen and oxygen from water by photolytic means in the absence of extraneous sacrificial electron donors or electron acceptors which comprises irradiating an aqueous mixture containing a photosensitizer and an electron relay with visible light, one of said photosensitizer and said electron relay functioning as an electron donor and the other as an electron acceptor while simultaneously mediating production with a hydrogen-generating catalyst and an oxygen generating catalyst, whereby catalyst-mediated electron transfer among the photosensitizer, electron relay and water produces hydrogen and oxygen and effects cyclic regeneration of said photosensitizer and electron relay.

4,382,847

METHOD OF MANUFACTURING BONDED PRODUCTS OF CELLULOSE OR CELLULOSE DERIVATIVES

Arne Åkesson, Bygatan 28, 191 46 Sollentuna, and Torbjörn Reitberger, Duvholmsgränd 16, 127 41 Skärholmen, both of Sweden

PCT No. PCT/SE78/00014, § 371 Date Mar. 6, 1980, § 102(e) Date Mar. 4, 1980, PCT Pub. No. WO80/00142, PCT Pub. Date Feb. 7, 1980

PCT Filed Jul. 6, 1978, Ser. No. 262,064

Int. Cl.³ C08G *2/02*

U.S. Cl. 204—159.12 **5 Claims**

1. A method of manufacturing particle board, comprised completely or partially of cellulose or a cellulose derivative, such as saw dust, wood chips, paper or vegetable fibres, the adhesive used being a condensation resin between an aldehyde, preferably formaldehyde, and urea, melamine or a phenol type, characterised by irradiating the product to 0.1 Mrad to 5 Mrad with ionising radiation, so that the material will undergo a certain cross-linking, residual quantities of uncured adhesive substances being reduced simultaneously therewith.

4,382,848

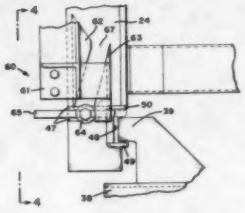
CAM-ACTUATED STOP MEMBER FOR LIFTING MECHANISM

Vaino J. Kosonen, W. Redding, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jul. 13, 1981, Ser. No. 282,633

Int. Cl.³ C25D *17/06, 17/10, 13/00*

U.S. Cl. 204—194 **2 Claims**



1. In an electrode stripping mechanism for raising and lowering electrodes from a bath so that deposits on the electrodes may be stripped, wherein a vertically movable hook member engages an electrode lifting ear to raise the electrode out of said bath and wherein a stripping device contacts said electrode as said electrode is being lowered for return to said bath, the contact of the stripping device with said electrode tending to lift said lifting ear away from said hook member, the improvement comprising a cam-actuated stop member mounted for vertical movement with said hook member and horizontally movable into close proximity or engagement with the upper surface of said lifting ear during upward movement of said electrode thereby maintaining contact between the lower surface of said anode ear and said hook member during the stripping operation.

4,382,849

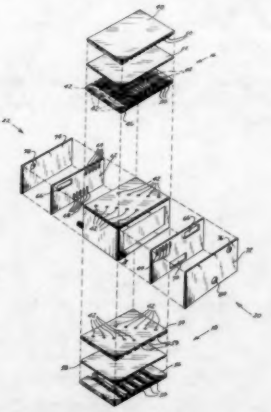
APPARATUS FOR ELECTROLYSIS USING GAS AND ELECTROLYTE CHANNELING TO REDUCE SHUNT CURRENTS

Laurence E. Spicer, R.R. #2, Box 262, Lineville, Iowa 50147

Filed Dec. 11, 1980, Ser. No. 215,182

Int. Cl.³ C25B *9/00, 11/04, 13/02, 15/08*

U.S. Cl. 204—258 **14 Claims**



1. An electrolyzer for the generation of gas, comprising:

a plurality of cells, said cells forming a group and being

arranged parallel and adjacent to each other and each of the cells electrically connected in series and to a source of electrical energy and utilizing a common electrolyte;

said cells including at least two electrodes and a micro-porous divider, said electrodes being spaced parallel to each other and constructed of sintered nickel with the microporous divider positioned between each pair of electrodes and permitting the flow of electrical charge therethrough;

electrolyte channeling means for carrying electrolyte to each of the cells including a first and second plate with a divider plate therebetween, all positioned on the bottom of the cells, electrolyte end plate means, said end plate means positioned on each end of the group of cells for directing the flow of electrolyte from the first plate to the second plate of said electrolyte channeling means; and

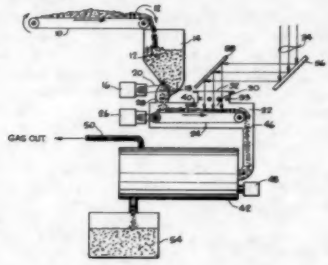
gas channeling means for carrying gas out of the cells including first and second plates with a divider plate therebetween all positioned on the top of the cells, gas end plate means, said gas end plate means positioned on each end of the group of cells for directing the flow of gas from the first plate to the second plate of said gas channeling means.

4,382,850

SOLAR RETORTING OF OIL SHALE

David W. Gregg, Morago, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1981, Ser. No. 258,352
Int. Cl.³ C10B *53/06*; C10G *1/02*; C10B *47/18*
U.S. Cl. 208—11 R **13 Claims**



1. An oil shale retorting apparatus comprising:

a first retorting chamber having a solar focus zone wherein oil shale disposed therein is rapidly brought to a predetermined retorting temperature without forming hot spots on said oil shale;

means for introducing oil shale into said first chamber;

a transparent window set in said first chamber adjacent said solar focus zone, said window being transparent to substantially all solar radiation;

a mirror adapted to reflect, concentrate, and direct solar radiation through said window into said solar focus zone;

a second retorting chamber, said second chamber receiving oil shale already at said retorting temperature from said solar focus zone, and further maintaining said oil shale at said retorting temperature for a pedetermined length of time, wherein oil, by-product gases, and spent oil shale are formed;

means for introducing said oil shale from said first chamber into said second chamber;

heating means for providing energy to said second chamber to maintain said oil shale disposed therein at said retorting temperature; and

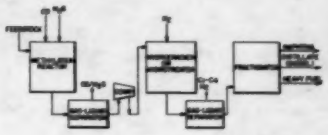
means for removing said oil, by-product gases, and spent oil shale from said second chamber.

4,382,851

METHYLATION PROCESS

Philip J. Angevine, West Deptford, and Stuart S. Shih, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,116
Int. Cl.³ C07C *3/52*
U.S. Cl. 208—49 **11 Claims**



1. A process for producing methylated aromatic or hydroaromatic compounds which comprises contacting an aromatic or hydroaromatic feed stock with hydrogen sulfide and carbon monoxide, said hydrogen sulfide and carbon monoxide being provided in sufficient amounts to react with the aromatic and hydroaromatic compounds in said feedstock to produce said methylated compounds and elemental sulfur.

4,382,852

DEMULSIFICATION OF BITUMEN EMULSIONS USING CATIONIC POLYMERS

David R. McCoy, Austin, Tex., and Kitchener B. Young, Fort McMurray, Canada, assignors to Texaco Canada Resources, Inc., Calgary, Canada and Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,454
Int. Cl.³ C10G *33/04*; C30B *3/00*; C09K *3/00*
U.S. Cl. 208—188 **5 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions by contacting the emulsions at a temperature of between 25° and 160° C. with cationic polymers of equal to or greater than about 2,000 molecular weight obtained by the reaction of polyalkoxydiamines of the following structure

$$O[(CH_2CH_2O)_m(CH_2\underset{\displaystyle CH_3}{\underset{|}{C}}HO)_nCH_2\underset{\displaystyle CH_3}{\underset{|}{C}}HNH_2]_2$$

where m=1 through 70 and n=0 through 5 with greater than about 0.6 to less than about 2.0 moles of epihalohydrin at temperatures above about 50° C. in hydrocarbon or aqueous solvent or neat with or without added catalyst.

4,382,853

DEMULSIFICATION OF BITUMEN EMULSIONS USING COMBINATIONS OF CHEMICAL AGENTS

David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,464
Int. Cl.³ C10G *33/04*; C09K *3/00*; C30B *3/00*
U.S. Cl. 208—188 **8 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions by adding thereto a combination of chemical agents comprising

(a) Salts of polymers and/or co-polymers of cationic monomers having the general structure

$$CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}X{-}(CH_2)_n\overset{\displaystyle R_1}{\underset{\displaystyle R_2}{N}}$$

where R=H or lower alkyl, X=NH or O, n>1, and R_1

and R_2 are hydrogen or alkyl and wherein the polymers or co-polymers have a molecular weight greater than about 2,000 and

(b) polycarbonates.

4,382,854

NI/CO MO P ON TITANIA-ALUMINA HYDRODESULFURIZING CATALYST AND PROCESS OF HYDRODESULFURIZING USING THE SAME

Geoffrey Wilson, Westlake Village, and Masami Kayamoto, Whittier, both of Calif., assignors to Filtral Corporation, Los Angeles, Calif.

Division of Ser. No. 46,466, Jun. 7, 1979, which is a continuation-in-part of Ser. No. 874,752, Feb. 3, 1978, which is a continuation-in-part of Ser. No. 874,753, Feb. 3, 1978, Pat. No. 4,196,101, which is a continuation-in-part of Ser. No. 671,333, Mar. 29, 1976, abandoned. This application Dec. 16, 1980, Ser. No. 217,161

Int. Cl.³ C10G *45/08*; B01J *27/14*

U.S. Cl. 208—216 R **3 Claims**

1. In the process of hydrodesulfurizing petroleum fractions, such as petroleum distillate or petroleum resid at elevated temperatures and superatmospheric pressure by passing hydrogen and the petroleum fraction over a hydrodesulfurizing catalyst consisting of an alumina support promoted with metals of Group IV-B, Group VI-B and Group VIII, the improvement which comprises conducting the hydrodesulfurization over a high strength, abrasion-resistant catalyst having an "Abrasion Index" of less than about 10% and a "Crush Index" of less than about 10; the catalyst being in the form of an anhydrous pellet consisting of a substrate and catalytic promoters, the substrate being essentially an intimate mixture of dehydrated alumina and a Group IV-B metal oxide selected from anatase and zirconia; the catalytic promoters containing at least one Group VIII metal oxide selected from the oxides of Fe, Ni or Co; and a Group VI-B metal compound selected from the metals of Mo and W, which metal compound is present in the form of a metal phosphate.

4,382,855

PROCESS FOR REMOVAL OF HYDROXY- AND/OR MERCAPTO-SUBSTITUTED HYDROCARBONS FROM COAL LIQUIDS

Clifford Ward, Louisa, and Charles A. Johnson, III, Ashland, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 28, 1981, Ser. No. 315,823

Int. Cl.³ C10G *29/20, 17/00*

U.S. Cl. 208—236 **19 Claims**

1. A process for removing substituted hydrocarbons selected from the group of hydroxy substituted hydrocarbons, mercapto-substituted hydrocarbons, and mixtures thereof from admixture with liquid coal naphtha boiling below about 400° F. which comprises:

(a) contacting said admixture with an aqueous composition of a water-miscible alkanolamine containing at least about 40% by weight of said alkanolamine, thereby resulting in a two phase mixture;

(b) separating the two phase mixture into an aqueous extract phase and a naphtha raffinate phase;

(c) admixing the aqueous extract phase with additional water to increase the water content thereof to about 70 to about 85 weight % and thereby forming a second naphtha phase and second aqueous extract phase;

(d) separating the second naphtha phase and second aqueous extract phase from each other; and

(e) separating the second aqueous extract phase into an aqueous-alkanolamine phase and a hydrocarbon phase containing said substituted hydrocarbons.

4,382,856

RECOVERY OF TIN

Nathaniel Arbiter, Vail, Ariz., assignor to Geological Research Corporation, Houston, Tex.

Continuation of Ser. No. 916,517, Jun. 19, 1978, abandoned. This application Dec. 24, 1980, Ser. No. 219,980

Int. Cl.³ B03C *1/00*

U.S. Cl. 209—10 **2 Claims**

1. The process of concentrating tin oxide minerals having a particle size less than about 10 microns from ore containing the same comprising the steps of forming an aqueous slurry of said ore containing about 15% to 25% total solids, subjecting said slurry to high intensity wet magnetic separation at a field strength of about 10,000 gauss to separate the slurry into a rougher non-magnetic product and a rougher magnetic product, subjecting said rougher non-magnetic product to two further separations at a field strength of about 20,000 gauss to form scavenger non-magnetic products and scavenger magnetic products, combining the scavenger magnetic products, subjecting said combined scavenger magnetic products to separation at a field strength of about 20,000 gauss to form scavenger/cleaner magnetic product and scavenger/cleaner non-magnetic product, and combining said rougher magnetic and scavenger/cleaner products magnetic products to form a concentrate containing the major proportion of the tin oxide minerals originally present in the slurry.

4,382,857

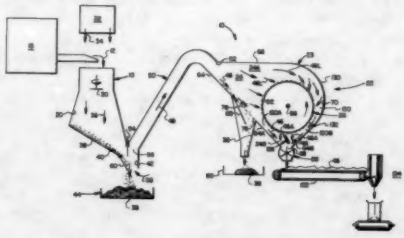
METHOD AND APPARATUS FOR EXTRACTING FIBER PRODUCT

Sidney J. Laughlin, P.O. Box 218, Rogers, Tex. 76596

Continuation-in-part of Ser. No. 273,360, Jun. 15, 1981. This application Nov. 27, 1981, Ser. No. 325,318

Int. Cl.³ B07B *9/00*

U.S. Cl. 209—23 **8 Claims**



2. A separator assembly for use in a fiber processing system for extracting fiber product entrained in an air stream and delivering it to a discharge outlet for further processing, comprising, in combination:

settling means including a housing enclosing a settling chamber and having an air stream inlet, a fiber product discharge outlet, and an air stream outlet;

a rotatable screen mounted for rotation within the settling chamber and interposed between the air stream inlet and the air stream outlet whereby fiber product is accumulated on said screen as the air stream flows through said screen and out of the air stream outlet;

said settling chamber housing being radially spaced from said rotatable screen thereby defining an annular flow passage extending around said rotatable screen from the air stream inlet to the fiber product discharge outlet; and,

baffle means disposed in the annular flow passage for impeding the flow of said air stream through the region of said annular passage lying between the fiber product discharge outlet and said rotatable screen.

4,382,858

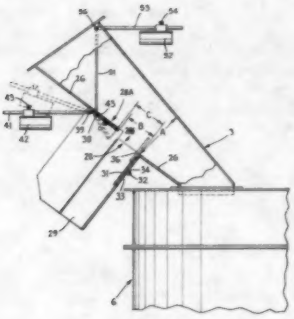
PIVOTED AND BALANCED GATE FOR A MATERIAL SEPARATOR

Robert H. Dudley, Portage, Mich., assignor to Reclamet, Inc., Kalamazoo, Mich.

Continuation of Ser. No. 191,799, Sep. 29, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 347,768

Int. Cl.³ B07B *4/02*

U.S. Cl. 209—136 **10 Claims**



1. In a system for recovering the cutting tool liquid from a mixture of heavy, high mass density components, machine turnings, cutting chips and cutting tool liquids, said system including a negative air pressure generating centrifugal separator means for extracting liquids from the machine turnings and cutting chips, means for separating the heavy components prior to entry of the mixture into said centrifugal separator means, said means comprising: a feed conduit communicating with an inlet opening in said centrifugal separator means and being the only inlet opening communicating with the interior thereof, said conduit having a bottom wall, means limiting the quantity of air entering said feed conduit at its intake end whereby said centrifugal separator means maintains a negative air pressure throughout said conduit; an opening in said bottom wall of said conduit providing an intake of air at a higher pressure than that in said conduit creating an entering column of air at a velocity sufficient to entrain said machine turnings, cutting chips and the cutting tool liquids while permitting said heavy components to drop through said opening, said means limiting the quantity of air entering said feed conduit also effecting a major portion of said air to enter said conduit through said opening; and movable gate means automatically responsive to the weight of a heavy, larger than normal size component for effecting an automatic, temporary increase in the size of said opening thereby facilitating said heavy, larger than normal size component to drop through the opening and a return of said opening to the initial size thereof.

4,382,859

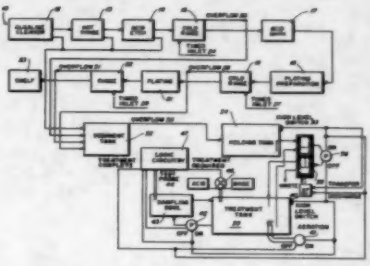
WATER CONSERVATION AND WASTE WATER TREATMENT SYSTEM

Gerald W. Dube, Windsor; Paul B. Strycharz, Rockville; Ross G. Steiger, and Douglas N. Johnston, both of West Willington, all of Conn., assignors to Litton Industrial Products, Inc., East Hartford, Conn.

Filed Jan. 11, 1982, Ser. No. 338,369

Int. Cl.³ B01D *21/24; C02B 1/30*

U.S. Cl. 210—96.1 **2 Claims**



1. A water conservation system for a plating line wherein the plating line comprises a series of treatment tanks and a plurality of rinse tanks interposed between selected ones of said treatment tanks, the system comprising

timed inlets for admitting fresh water to each of said rinse tanks for a short period of time immediately following the introduction of a part into said rinse tanks,

overflow ducts for each of said rinse tanks,

a sediment tank for receiving the discharge from each of said rinse tanks via said overflow ducts,

a holding tank, said holding tank receiving overflow from said sediment tank,

a treatment tank,

means responsive to a full condition in said holding tank for transferring the contents thereof to said treatment tank,

logic means,

testing means responsive to said logic means for determining the PH condition of said treatment tank, and

means for adding a predetermined amount of an appropriate neutralizer to said treatment tank.

4,382,860

DEVICE FOR FILTERING LIQUID OF HIGH VISCOSITY SUPPLIED UNDER PRESSURE, IN PARTICULAR A DEVICE THAT CAN BE CONNECTED TO AN EXTRUDER TO FILTER THERMOPLASTIC MELTS OF PLASTIC COMPOSITION

Rudolf Fritsch, Stuttgart, Fed. Rep. of Germany, assignor to Automatik Apparate-Maschinebau H. Hench GmbH, Grossostheim, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,595

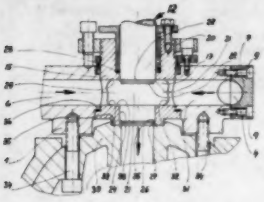
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036400

Int. Cl.³ B01D *29/36*

U.S. Cl. 210—431 **9 Claims**

1. A device for filtering liquids of high viscosity supplied under pressure, in particular a device that can be connected to an extruder to filter thermoplastic melts of plastic composition, said device having at least two exchangeable filters attached in sealing relation to the end plane of a valve body, said filters being supplied with liquid through an annular passage in such a manner that the valve stems of the lift valves located at the branches of the annular passage remain surrounded by liquid also when said valves are closed, as a result of the clearance space surrounding the valve stems, characterised by the shaft of the valve stem being equal to the largest diameter of the valve seat and the shaft casing that surrounds the shaft in sealing relation extending up to the clearance space broadened

with respect to the valve seat, the height of said space measured in the direction of draw being essentially equal to the diameter of the annular passage, whereby the front edge of said



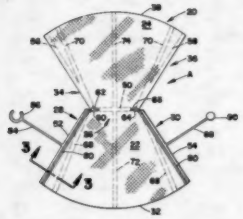
shaft when the respective valve is open approximately ends at the surface of the clearance space, and by having the valve stem in a closed position penetrate the wall of the valve body in a sealing relation up to the end plane of the valve body.

4,382,861

LIQUID FILTER

Frans L. Adeboi, Berea, and James G. Freeman, Euclid, both of Ohio, assignors to The Meyer Dairy Products Company, Cleveland, Ohio

Filed Feb. 13, 1981, Ser. No. 234,324
Int. Cl.³ B01D *29/14*
U.S. Cl. 210—497.2 **24 Claims**



1. A permanent, reusable beverage filter adapted to assume a filter condition generally coextensive with at least a portion of the internal side wall of a somewhat cup-shaped filter support at least when said filter is inserted thereinto, said filter comprising:

a thin flexible filter body having opposed inner and outer faces, an outer peripheral edge and a porosity adapted to filter a beverage passing therethrough to some desired extent, said filter body further including a generally centrally located elongated band-like area which defines a filter bottom; and, a support skeleton non-integral with the material of said filter body and affixed to at least one face of said filter body for giving form to and supporting said body when said filter is in said filter condition, said support skeleton at least including a plurality of support ribs extending generally radially of said band-like area toward said filter body outer peripheral edge.

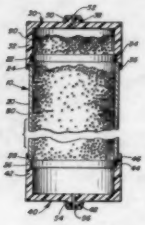
4,382,862

BACTERIA-REMOVING CARTRIDGE AND PREPARATORY PROCESS

Terry R. Dillman, Rockford, Ill., assignor to Illinois Water Treatment Company, Rockford, Ill.

Filed May 8, 1981, Ser. No. 261,837
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—668 **24 Claims**

24. A method of removing bacteria from a stream of liquid using a replaceable cartridge of ion exchange resin comprising loading a replaceable cartridge with an ion exchange resin having the capacity of adsorbing bacteria and with a highly soluble bactericide, inserting said cartridge into a fluid conduit whereby the fluid in said conduit passes into contact with said resin and said bactericide, dissolving said bactericide in said



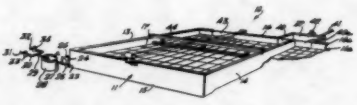
water rapidly and completely; sterilizing with said dissolved bactericide all portions of said replaceable cartridge downstream of said bactericide; flushing said replaceable cartridge free of bactericide; and adsorbing bacteria from said fluid stream with said ion exchange resin to provide a purified fluid stream without bactericide.

4,382,863

SLUDGE DEWATERING SYSTEM

Morris M. Riise, North Miami, Fla., assignor to International Sludge Reduction Company, Fort Lauderdale, Fla.

Continuation of Ser. No. 98,887, Nov. 30, 1979, abandoned, which is a continuation of Ser. No. 930,529, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 739,602, Nov. 8, 1976, abandoned. This application Oct. 30, 1980, Ser. No. 202,241
Int. Cl.³ B01D *23/02*
U.S. Cl. 210—702 **30 Claims**



7. An improved process for dewatering sludge on a filter medium, which sludge has been pretreated, where required, with a chemical conditioner to form soft masses of various sizes including larger and smaller sludge masses, wherein the improvement comprises:

(a) passing the sludge onto the upper surface of a multi-layered filter plate comprising:

(i) a thin top layer having a smooth, hard upper surface and a lower surface and consisting essentially of individually sharp pointed fine aluminum oxide particles, rigidified and then bonded together with a binding agent which does not impede high volume percolation;

(ii) a middle levelling layer having upper and lower surfaces and composed of fine aggregate particles, rigidified and then bonded together and to the lower surface of the top layer with a binding agent which does not impede high volume percolation; and

(iii) a bottom support layer composed of relatively coarse aggregate particles, rigidified and then bonded together and to the lower surface of the middle layer with a binding agent which does not impede high volume percolation,

which filter plate is monolithic and structurally rugged enough to support mobile sludge removal means on the upper surface of the top layer of the filter plate without damage to the filter plate;

(b) permitting the larger sludge masses to settle by force of

gravity so that they are pierced by the sharp points of the aluminum oxide particles on the upper surface of the filter plate and form a layer over the upper surface of the filter plate;

(c) applying a vacuum of sufficient strength to draw filtrate from the sludge through the layer of larger sludge masses on the upper surface of the filter plate and through the filter plate, but not so strong as to break down the larger sludge masses, such that the smaller sludge masses are trapped by the already settled larger sludge masses, until the sludge is dewatered to an extent making it removable by mobile sludge removal means; and

(d) removing the dewatered sludge from the surface of the filter plate by mobile sludge removal means;

wherein the process is characterized by rapid dewatering and substantial self-filtering action.

4,382,864

PROCESS FOR DEWATERING SLUDGES

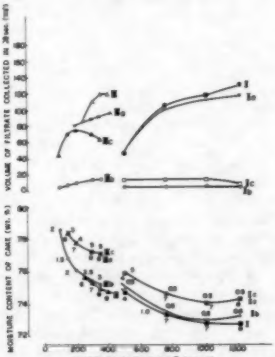
Masanori Hashimoto, Yamato; Yasuhiko Ishii, Tokyo, and Yasuhiro Ohi, Kokubunji, all of Japan, assignors to Kurita Water Industries Ltd., Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 287,453

Claims priority, application Japan, Aug. 8, 1980, 55-108213; Jan. 28, 1981, 56-11364; Feb. 6, 1981, 56-15806; Feb. 7, 1981, 56-16296; Feb. 9, 1981, 56-16867; Feb. 12, 1981, 56-19330

Int. Cl.³ C02F *11/14*

U.S. Cl. 210—727 **11 Claims**



1. A process for dewatering an aqueous sludge consisting essentially of water and suspended solid particles which have ionic charges of a first polarity, which comprises the steps of: in a first stage, adding to said sludge an effective amount of a first, water-soluble, organic flocculant that provides in said sludge ionic charges of a second polarity opposite to said first polarity, and simultaneously intensely agitating said sludge under conditions effective to completely neutralize the ionic charges of said suspended solid particles and to prevent formation of flocs having an average size greater than 2 mm; then, without removing water from said sludge, in a second stage, adding to said sludge obtained from said first stage an effective amount of a second, water-soluble, organic flocculant that provides in said sludge ionic charges of said first polarity, and simultaneously agitating said sludge under milder mixing conditions than those used in said first stage and which are effective to flocculate said sludge to form large flocs having a larger floc size than any flocs formed in said first stage and which large flocs are non-sticky to the touch; and then subjecting the flocculated sludge obtained from said second stage to a mechanical dewatering operation, wherein at least one of said flocculants is selected from the group consisting of (a) an anionic organic flocculant selected from the group consisting of carboxymethyl cellulose, sodium alginate and carboxymethyl starch, and (b) a cationic organic flocculant selected from the group consisting of cationized starch, cationized cellulose, cationized guar gum and water-soluble salts of chitosan.

4,382,865

TREATMENT OF REDUCIBLE HALOHYDROCARBON CONTAINING AQUEOUS STREAM

Keith H. Sweeny, West Covina, Calif., assignor to Envirogenics Systems Company, El Monte, Calif.

Continuation-in-part of Ser. No. 942,336, Sep. 14, 1978, Pat. No. 4,219,419, which is a continuation-in-part of Ser. No. 780,849, Mar. 24, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,494

The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.

Int. Cl.³ C02F *1/70*

U.S. Cl. 210—743 **16 Claims**

1. A method of treatment of aqueous streams containing below 100 ppm of reducible organic compounds selected from soluble halogenated, nitrogen containing or hydroxyl containing organic compounds to produce an effluent stream containing at least 90% less of the compounds and a low level of metal ions comprising the steps of:

adjusting the pH of the stream to between 6 and 8;

flowing the pH adjusted stream upwardly through a column containing particles of elemental metal reductant capable of reduction of said organic compounds and expanding said particles to at least twice their unsuspended volume to form a fluidized bed of said particles said reductant consisting essentially of a first metal selected from iron, aluminum, zinc, magnesium or cadmium and 0.1 to 10 meq per gram of reductant of at least one catalytic metal selected from copper, silver, cobalt or nickel;

reductively reacting the compounds with the reductant to produce said effluent stream; and

removing the effluent stream from the bed.

10. A system for treatment of aqueous streams containing below 100 ppm of reducible organic compounds to produce an effluent stream containing at least 90% less of the compounds and a low level of metal ions comprising:

a source of said stream;

pH control means for controlling the pH of said stream to a selected pH between 6 and 8;

a column having a bottom inlet for receiving a flow of said stream and an outlet for removing said effluent;

flow means connecting said source to said inlet for flowing said stream upwardly through said column; and

a bed of elemental metal reductant particles capable of reductive degradation reaction with said organic compounds to form an effluent leaving said outlet containing a significantly reduced level of compound, said metal reductant consisting of a first metal selected from iron, aluminum, zinc, magnesium or cadmium and 0.1 to 10 meq per gram of reductant of at least one catalytic metal selected from copper, silver, cobalt or nickel, said bed being constrained within said column between said inlet and outlet whereby on upward flow of said stream a fluidized bed of said particles is formed for reductive degradation of said compound.

4,382,866

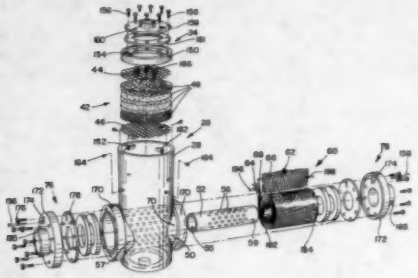
ELECTRO-CHEMICAL SYSTEM FOR LIQUID FILTRATION

Dennis E. J. Johnson, 1025 Garfield Ave., Aurora, Ill. 60506

Continuation-in-part of Ser. No. 213,829, Dec. 9, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 325,817

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—748 **14 Claims**



8. A modular recirculating filter device for liquid filtration comprising:

a liquid filtrant receiving cylinder having a bore extending longitudinally thereof,

means for connecting to one end of said cylinder bore the source of liquid filtrant,

means for sealing off the other end of said cylinder,

a cross tube connected to said cylinder and extending across said bore,

said cross tube having a width that is less than the width of said bore,

said cross tube having its external surfacing in sealed relation thereabout with said cylinder at either end of said tube and having one end thereof projecting from said cylinder,

a tubular mandrel mounted in said tube and extending substantially coextensively with said tube,

with the portions of said cross tube and said mandrel disposed within said cylinder each being formed to define multiple liquid passing apertures thereabout,

and an elongate composite filter sheeting convoluted about said mandrel and filling the space between same and said cross tube,

said composite filter sheeting comprising:

a pair of foraminous electrically conductive sheets separated by a sheet of fibrous material,

means for electrically connecting said foraminous sheets to a source of direct current electrical energy in anode and cathode relation,

and means for discharging filtered liquid from within said mandrel,

a filter unit disposed across said bore of said cylinder between said one end of same and said cross tube,

said filter unit comprising:

a pair of foraminous electrically conductive sheets separated by layers of fibrous filtration material,

and means for electrically connecting said foraminous sheets to a source of direct current electrical energy in anode and cathode relation,

said layered filter unit fibrous material being effective to filter out particle sizes down to about five microns,

and said composite filter sheeting fibrous material being effective to filter out particle sizes down to the 0.5 to one micron range,

said source of electrical energy providing a direct current charge in the range of from about twelve to about twenty-four volts and five to fifty amperes,

said means for connecting the source of liquid filtrant to said one end of said cylinder including a first liquid directional flow reversing valve,

said means for discharging the filtered liquid from said mandrel including a second liquid flow reversing valve,

and means for simultaneously positioning said valves for filtering flow of the filtrant through said device in one position thereof, and for solids removal backwash liquid flow through said device in a second reverse position thereof.

4,382,867

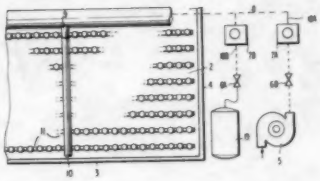
IN PLACE GAS CLEANING OF DIFFUSION ELEMENTS

Frank L. Schmit, Port Washington; David T. Redmon, Racine, and Lloyd Ewing, Bayside, all of Wis., assignors to Water Pollution Control Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 191,974, Sep. 29, 1980, abandoned. This application Nov. 4, 1980, Ser. No. 203,834

Int. Cl.³ C02F *3/20*

U.S. Cl. 210—754 **80 Claims**



1. In a process of treating a liquid medium by passing treating gas through multi-pore diffusion elements submerged in the medium, wherein foulants in the medium or treating gas have a tendency to form deposits in the elements or at their surfaces and to cause a progressive increase in the dynamic wet pressure and/or mean bubble release pressure of the diffusion elements relative to a previous base condition of said elements, and in which the elements are cleaned in place by passing a cleaning gas through them alone or in admixture with treating gas, said cleaning gas having a different composition than said treating gas and being capable of reducing the dynamic wet pressure and/or the mean bubble release pressure of fouled diffusion elements, the improvement which comprises:

conducting said gas cleaning with sufficient frequency, including continuously, and with sufficient amount(s) of cleaning gas for restricting any potential or actual increase in the dynamic wet pressure level of the elements, above a previous base condition of said dynamic wet pressure, to about 25 inches or less of water gauge of 2 SCFM per square foot of active gas discharge surface of the elements, and/or restricting any potential or actual increase in the mean bubble release pressure level of the elements, above a previous base condition of said mean bubble release pressure, to about 25 inches of water gauge or less;

simultaneously applying said cleaning gas to one or more groups of at least about 10 diffusion elements per group by feeding the cleaning gas to the elements through a gas distribution network having a submerged portion including a plurality of flow regulating means, a plurality of plenums and a plurality of diffusion elements, said flow regulating means being connected with said plenums to deliver gas to said plenums, said flow regulating means being sized or adjusted to deliver said gas at a substantially similar rate to each of said plenums, each of said plenums being connected directly or indirectly with one or more of said diffusion elements whereby said diffusion element or elements connected to one of said plenums can be supplied with gas at a substantially similar rate as compared to the rate at which gas is supplied to the diffusion elements connected to the other plenum or plenums; and

discharging treating gas alone or in admixture with cleaning

gas, through the diffusion elements for an extended cycle of operation constituting at least about 30 total days of continuous or intermittent passage of treatment gas through the elements;

whereby fouling is restrained during said cycle by applying the cleaning gas with sufficient frequency and in sufficient amounts to maintain the dynamic wet pressure and/or mean bubble release pressure at or below the aforesaid levels.

4,382,868

ORGANOPHILIC CLAY GELLANTS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Houston, Tex.

Filed Aug. 13, 1981, Ser. No. 292,408
Int. Cl.³ C10M *5/20, 5/24*
U.S. Cl. 252—28 **38 Claims**

1. A gellant comprising from about 58% to about 80% of an organophilic clay, from about 3% to about 10% of an alcohol having from 1 to 5 carbon atoms, and from about 15% to about 40% water.

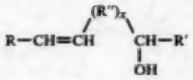
4,382,869

FRICTION REDUCING AND CORROSION INHIBITING LUBRICANT ADDITIVES AND THEIR COMPOSITIONS

Andrew G. Horodysky, Cherry Hill; Phillip S. Landis, Woodbury, and Robert M. Gemmill, Jr., Pitman, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

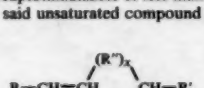
Filed Jun. 18, 1981, Ser. No. 274,839
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 **19 Claims**

1. A product of reaction obtained by reacting a hydroxyl-containing unsaturated compound or a borated derivative thereof, the borated derivative being prepared at a temperature of from about 75° C. to about 270° C. using up to stoichiometric amounts of unsaturated compound and boron compound with a mercaptothiadiazole, at a temperature of from about 140° C. to about 200° C. using a ratio of unsaturated compound or borated derivative to mercaptothiadiazole of less than 1:1 to more than 2:1, and wherein said unsaturated compound has the formula



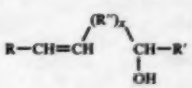
wherein R and R′ are the same or different and are hydrogen, a straight chain alkyl, a branched chain alkyl, alkenyl, cycloalkyl, cycloalkenyl, alkyryl, aryl or alkaryl and contain from 1 to 30 carbon atoms, R″ is a hydrocarbyl group containing from 1 to 15 carbon atoms and x is zero or 1.

8. A lubricant composition containing a major portion of a lubricating oil or a grease prepared therefrom and a minor friction reducing or corrosion inhibiting amount of a product of reaction obtained by reacting a hydroxyl-containing unsaturated compound or a borated derivative thereof, the borated derivative being prepared at a temperature of from about 75° C. to about 270° C. using up to stoichiometric amounts of unsaturated compound and boron compound with a mercaptothiadiazole, at a temperature of from about 140° C. to about 200° C. using a ratio of unsaturated compound or borated derivative to mercaptothiadiazole of less than 1:1 to more than 2:1, and wherein said unsaturated compound has the formula



wherein R and R′ are the same or different and are hydrogen, a straight chain alkyl, a branched chain alkyl, alkenyl, cycloalkyl, cycloalkenyl, alkyryl, aryl or alkaryl and contain from 1 to 30 carbon atoms, R″ is a hydrocarbyl group containing from 1 to 15 carbon atoms and x is zero or 1.

19. A method of reducing friction in an internal combustion engine by treating the moving parts of said engine with a lubricating oil or a grease prepared therefrom containing a minor effective amount of a friction reducing or corrosion inhibiting product obtained by reacting a hydroxyl-containing unsaturated compound or a borated derivative thereof, the borated derivative being prepared at a temperature of from about 75° C. to about 270° C. using up to stoichiometric amounts of unsaturated compound and boron compound with a mercaptothiadiazole, at a temperature of from about 140° C. to about 200° C. using a ratio of unsaturated compound or borated derivative to mercaptothiadiazole of less than 1:1 to more than 2:1, and wherein said unsaturated compound has the formula



wherein R and R′ are the same or different and are hydrogen, a straight chain alkyl, a branched chain alkyl, alkenyl, cycloalkyl, cycloalkenyl, alkyryl, aryl or alkaryl and contain from 1 to 30 carbon atoms, R″ is a hydrocarbyl group containing from 1 to 15 carbon atoms and x is zero or 1.

4,382,870

ANTIFREEZE CORROSION INHIBITOR COMPOSITION FOR ALUMINUM ENGINES

Michael L. Abel, Plainfield, and Thomas P. Yates, Frankford, both of Ill., assignors to Northern Petrochemical Company, Omaha, Nebr.

Filed Jul. 6, 1981, Ser. No. 280,877
Int. Cl.³ C09K *5/00;* **F28F** *23/00*
U.S. Cl. 252—75 **5 Claims**

1. A polyhydroxy alcohol-based antifreeze composition for use in internal combustion engines which comprises:

(a) from about 0.07 percent to about 0.35 percent nitrate,

(b) from about 0.04 percent to about 0.08 percent silicate,

(c) from about 0.05 percent to about 0.25 percent of a compound selected from a group consisting of tolyltriazole, benzotriazole, and mixtures thereof,

(d) from about 0.2 percent to about 1.5 percent borate, and

(e) from about 0.2 percent to about 0.75 percent phosphate,

wherein the cations are selected from a group consisting of sodium, potassium, and mixtures thereof and wherein the pH of the composition is from bout 9 to about 11.5.

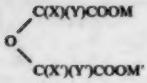
4,382,871

DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, and Mark D. Ronort, Haworth, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 123,875, Feb. 22, 1980, Pat. No. 4,260,513, which is a division of Ser. No. 954,023, Oct. 23, 1978, Pat. No. 4,228,027, which is a division of Ser. No. 770,334, Feb. 22, 1977, abandoned, which is a division of Ser. No. 226,213, Feb. 14, 1972, Pat. No. 4,025,450, which is a continuation-in-part of Ser. No. 187,115, Oct. 6, 1971, abandoned. This application Nov. 12, 1980, Ser. No. 206,216
Int. Cl.³ C11D *10/02*
U.S. Cl. 252—174.19 **30 Claims**

1. A detergent composition comprising a water-soluble organic detergent compound selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergent compounds and as a detergent builder a compound represented by the general formula:



wherein X and X' are selected from the group consisting of hydrogen, alkyls having from 1 to 4 carbon atoms, alkoxys having from 1 to 4 carbon atoms, alkoxyalkyls having from 1 to 4 carbon atoms, hydroxyalkyls having from 1 to 4 carbon atoms, carboxy in salt form, and carboxymethyloxy in salt form, provided that X and X' can be of the same substituent group only when they are both chosen from alkyl groups having 1 to 4 carbon atoms and provided that when either X or X' is alkoxy, the other group cannot be carboxy in salt form or hydroxyalkyl and further provided that when either X or X' is hydrogen, the other group can only be alkoxyalkyl or hydroxyalkyl; Y and Y' are hydrogen; and, M and M' are selected from the group consisting of alkali metals, ammonium, methylammonium, (tetramethyl) ammonium, normal monoethanolamine, diethanolamine, triethanolamine salts, normal monoisopropylamine salts, normal isopropanolamine salts, normal morpholine salts, the weight ratio of detergent builder to detergent compound ranging from about 1:20 to about 50:1.

4,382,872

METALLURGICAL EXTRACTANT SYSTEM

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 60,256, Jul. 25, 1979, Pat. No. 4,254,087. This application Sep. 8, 1980, Ser. No. 184,828

Int. Cl.³ C22B *3/00;* **C07F** *17/02;* **C01G** *49/00*

U.S. Cl. 252—189 **9 Claims**

1. An extractant system useful for the selective extraction of cobalt, copper or nickel metal values present in an aqueous acidic ore leach liquor containing more than one metal value, said extractant system comprising:

(a) an alkylaromatic sulfonic acid having a molecular weight of at least about 400,

(b) a chelating amine having a pKa in the range from about 3 to about 9 selected from the group consisting of picolylamines, oxazoles, benzoxazoles, pyridyl imidazoles and picolinic acid amides and esters, and

a water-immiscible diluent for (a) and (b).

4,382,873

DISPERSANT AND BIODEGRADANT FORMULATIONS FOR TREATING HYDROCARBON-POLLUTED WATERS

Claude Gatellier, Boulogne; Andree Plessis, Le Vesinet; Patrick Gateau, Trappes, and Jean-Pierre Durand, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 19, 1980, Ser. No. 218,246

Claims priority, application France, Dec. 20, 1979, 79 31562

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—312 **23 Claims**

1. A biodegradable composition which is both an oil dispersant and a nutrient for microorganisms, and which is useful for accelerating the microbiological degradation of petroleum materials in water, said composition comprising:

(a) at least one assimilable nitrogen compound, said compound being a condensation product of melamine and formaldehyde or a condensation product of melamine with urea and formaldehyde;

(b) at least one organic hydroxy compound;

(c) at least one assimilable phosphorus compound; and

(d) at least one surface-active agent.

4,382,874

ORGANO ZIRCONIUM COMPLEXES

Fred W. Jenkins, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 5, 1980, Ser. No. 146,837

Int. Cl.³ B01D *17/04*

U.S. Cl. 252—329 **31 Claims**

1. A composition of matter comprising

(1) an O/W organic demulsifier which contains nitrogen atoms, and

(2) a water soluble zirconium compound which can form the tetramer in aqueous solution.

4,382,875

EXTRACTION TREATMENT

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 202,584, Oct. 31, 1980, Pat. No. 4,338,181. This application Mar. 31, 1982, Ser. No. 364,009

Int. Cl.³ C25B *11/02;* **H01M** *4/88;* **C04B** *35/00*

U.S. Cl. 252—425.3 **1 Claim**

1. A process of forming an electrode layer comprising depositing a soluble salt on a filter medium, depositing electrode layer material on said salt, consolidating said material and thereafter dissolving said salt.

4,382,876

METHOD FOR PRODUCING CATALYSTS FOR GAS PHASE OXIDATION OF SATURATED AND/OR UNSATURATED C_4-HYDROCARBONS TO MALEIC ANHYDRIDE

Kurt Neubold, Lindenstrasse 57m, 4390 Gladbeck, and Klaus-Dieter Gollmer, Brahmweg 20, 4250 Bottrop-Kirchhellen, both of Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,112

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010710

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **8 Claims**

1. A method for producing catalysts for gas phase oxidation of saturated or unsaturated hydrocarbons to maleic anhydride, comprising: (a) mixing a vanadium compound containing pentavalent vanadium with orthophosphoric acid in an alcohol from the series of monohydric lower aliphatic alcohols having 2–8 C-atoms, and a reducing agent combination of H_3PO_3 + alcohol wherein the sum of H_3PO_3 and H_3PO_4 is so controlled that an atomic atomic ratio of P to V of 1.0 to 1.2 is attained and wherein said H_3PO_3 is used in such sub-stoichiometric amounts that it is sufficient to reduce the vanadium to an oxidation state only of 4.2 to 4.4, and then said reducing agent combination is used to further reduce the vanadium to an oxidation state between 3.9 and 4.0, any water if present being distilled off as an azeotrope with the alcohol by heating; (b) adding titanium dioxide obtained through high temperature pyrolysis of titanium tetrahalide and optional additional promoters Ni, Fe, Li, Mg; (c) forming precipitated catalyst in a known manner; and (d) activating thhe catalyst in an oxidation reactor at temperatures of about 450° to 510° C. for about 12 to 72 hours in the presence of an air-hydrocarbon stream.

4,382,877

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 22, 1981, Ser. No. 275,628

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—437 **32 Claims**

1. A catalyst composed of a support containing (1) one or more of a Group IIA metal compound selected from the group consisting of magnesium, calcium, strontium and barium compounds, (2) alumina and (3) aluminum phosphate carrying at

least one metal selected from the group consisting of nickel, titanium, vanadium, copper, chromium, iron, cobalt, molybdenum and tungsten thereon, said support having an average pore radius of from about 10 Å, to about 300 Å, a surface area ranging from about 100 m^2/g to about 350 m^2/g and a pore volume of from about 0.3 cc/g to about 1.5 cc/g, said Group IIA metal compound being present in an amount ranging from about 0.5 to about 75 mole percent, alumina in an amount ranging from about two to about 90 mole percent and aluminum phosphate in an amount ranging from about three to about 95 mole percent, said metal being present in the range of about five to about 60 weight percent.

4,382,878

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 22, 1981, Ser. No. 275,654
Int. Cl.³ B01J *27/14*
U.S. Cl. 252—437 **10 Claims**

1. A catalyst support comprising (A) (I) a Group IIA metal oxide selected from the group consisting of calcium oxide, strontium oxide and barium oxide, (II) a combination of two or more Group IIA metal oxides selected from the group consisting of calcium oxide, strontium oxide and barium oxide or (III) a combination of magnesium oxide with at least one Group IIA metal oxide selected from the group consisting of calcium oxide, strontium oxide and barium oxide; (B) alumina and (C) aluminum phosphate matrix, characterized after calcination at 500° C. for about 10 hours as amorphous, and having an average pore radius of from about 10 Å to about 300 Å, a surface area ranging from about 100 m^2/g to about 350 m^2/g, a pore volume of from about 0.3 cc/g to about 1.5 cc/g and wherein component (A) is present in an amount ranging from about 0.5 to about 75 mole percent, component (B) is present in an amount ranging from about two to about 90 mole percent and component (C) is present in an amount ranging from about three to about 95 mole percent.

4,382,879

MATERIAL FOR ADSORBING IODINE AND METHOD FOR PREPARING THEREOF

Kiyomi Funabashi, Katsuta; Kunio Kamiya, Hitachi; Makoto Kikuchi, Hitachi; Toshio Takagi, Hitachi; Morimasa Hashimoto, Mishima, and Mitsuyoshi Ichimura, Numazu, all of Japan, assignors to Hitachi, Ltd. and Nippon Engelhard, Ltd., both of Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,277
Claims priority, application Japan, Feb. 4, 1980, 55-11478
Int. Cl.³ B01J *20/08, 20/10, 20/32*
U.S. Cl. 252—457 **15 Claims**

1. An adsorbent for at least iodine and/or organic iodine compounds comprising a porous body made of a material selected from the group consisting of alumina and silica gel, having larger pores of a mean pore diameter of 200 to 2000 Å and smaller pores of a mean pore diameter of 40 to 200 Å on the surfaces of the larger pores, said porous body being impregnated with a substance which readily reacts with iodine and/or organic iodine compounds.

2. An adsorbent according to claim 1, wherein the substance which readily reacts with iodine and/or organic iodine compounds is a metal or a salt thereof and is impregnated in the form of an aqueous solution thereof.

3. An adsorbent according to claim 2, wherein the metal is silver, copper, lead, zinc, cadmium, nickel or cobalt.

9. A process for preparing an adsorbent for at least iodine and/or organic iodine compounds which comprises

a first step of forming particles having smaller pores of a mean pore diameter of 40 to 200 Å, wherein the starting material for forming the particles is selected from the group consisting of alumina and silica gel,

a second step of forming a porous body having larger pores of a mean pore diameter of 200 to 2000 Å and smaller pores of a mean pore diameter of 40 to 200 Å on the surfaces of the larger pores by bonding the particles obtained in the first step together, and

a third step of impregnating the porous body with a substance which readily reacts with iodine and/or organic iodine compounds.

4,382,880

PREPARATION OF MOLYBDENUM/TUNGSTEN MIXED OXIDE CATALYSTS

Jean-Yves Derries, Bourg-la-Reine, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Apr. 21, 1981, Ser. No. 256,046
Claims priority, application France, Apr. 25, 1980, 80 09314
Int. Cl.³ B01J *23/82, 23/84, 23/86, 23/88*
U.S. Cl. 252—465 **15 Claims**

1. A process for the preparation of an active catalyst having the formula:

$$A_aMo_cW_dB_{b_1}Bi_{b_2}Fe_{b_3}O_x$$

wherein A is at least one of the metals cobalt, nickel, manganese and/or lead; B is chromium and/or thallium; a is the sum of each of the metals A and ranges from greater than zero to about 12; c and d each ranges from zero to 12, with their sum being about 12; b_1 is the sum of the metals B and can be zero or greater, b_2 and b_3 are greater than zero, and the sum of $b_1+b_2+b_3$ ranges from greater than zero to about 1.5 $[(c+d)-a]$; and x fulfills all unsatisfied valences; which process comprises (I) intimately admixing (i) a first aqueous solution comprising the ammonium salts of the molybdenum and/or tungsten with the pH of the solution being in the range of from about 5.4 to about 5.8, and with said ammonium salts being present therein in amounts such as to satisfy the formula parameters c and d, with (ii) a second aqueous solution comprising the salts of bismuth, iron, and A and/or B metals, at least one of said salts being either a nitrate or a chloride, and said salts being present therein in amounts such as to satisfy the formula parameters of a, b_1 b_2 and b_3 until a first solids fraction precipitates therefrom, (II) thereafter basicifying the resulting suspension with ammonia to a pH value in excess of the pH of said first aqueous solution, until a second solids fraction precipitates therefrom; (III) recovering said first and said second solids fractions via filtration, and drying the same; and (IV) thence calcining said dried solids fractions.

4,382,881

ANTISTATIC COATING AND ITS METHOD OF PREPARATION

Fernand J. Levy, Puteaux, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France

Filed Aug. 14, 1980, Ser. No. 178,167
Claims priority, application France, Aug. 14, 1979, 79 20695
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **4 Claims**

4. An antistatic coating composition designed for use on external surface portions of an aircraft and exhibiting a timewise-stable surface resistivity, for a coating thickness of between about 15 microns and about 80 microns, which is low enough to preclude the building up of electric charges on said aircraft portions while being not so low as to become an effective radio-electric shield, comprising a mixture of a conductive synthetic resin component which is a black paint free of metal particles and of a compatible insulating resin component which is a clear or colorless varnish, both components being selected from the group comprising polyurethane and epoxy resins, said coating composition exhibiting a timewise-stable surface resistivity lying within a range of from 5 to 100 megohms per square for a coating thickness of between about 15 and about 80 microns.

4,382,882

LAMELLAR CARBON-NITROSYL OR NITRONIUM SALT COMPOSITIONS

F. Lincoln Vogel, Voorhees Rd., R.D. #3, Whitehouse Station, N.J. 08889, and William C. Forsman, 102 S. Swarthmore Ave., Swarthmore, Pa. 19081

Filed Dec. 29, 1980, Ser. No. 221,013
Int. Cl.³ H01B 1/04
U.S. Cl. 252—503 31 Claims

1. An electrically conductive lamellar carbon composition, which comprises:

carbon having a graphite-like, stacked-plane-crystalline form intercalated with one or more nitrosyl salts selected from NOX or nitronium salts selected from NO_2X wherein X is a stable, conjugate anion of an electrophilic atom, molecule or Lewis acid, said anion being selected from the group consisting of a halide anion, oxyhalide anion, bisulfate anion, nitrate anion, boron halide anion, a stable halide anion of a first, second or third transition series metal, a halide anion of a group IVa metaloid and a halide anion of a group Va metaloid; and wherein the proportion of the nitrosyl salt or salts or nitronium salt or salts to carbon in the composition produces a resistivity of the composition of less than about 10^{-5} ohm cm.

4,382,883

METHOD FOR PRODUCING A STORAGE BATTERY PLATE

David P. Boden, Collegeville, Pa., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 27, 1981, Ser. No. 286,805
Int. Cl.³ H01B 1/08
U.S. Cl. 252—521 2 Claims

1. In a method for producing a negative storage battery plate which includes the steps of preparing a paste from at least one lead oxide and sulfuric acid, shaping the paste to a desired plate configuration and drying the paste, the improvement comprising

forming a mixture of lead oxide and barium carbonate, said barium carbonate being present in an amount from 0.1 to 1 parts by weight per 100 parts by weight of lead, calculated as PbO, said barium carbonate being distributed throughout said mixture; and

mixing said mixture with sulfuric acid to form a paste, whereby, as a consequence of reaction between the sulfuric acid and the barium carbonate, finely divided barium sulfate is formed in situ in the paste and carbon dioxide is released to harden the paste.

4,382,884

FIRE-RETARDANT, INTUMESCENT COMPOSITION AND ITS USE FOR THE FLAMEPROOFING OF SUBSTRATES, AND AS A FIRE-EXTINGUISHING AGENT COMPRISING AN AMMONIUM SALT, A WATER-SOLUBLE NITROGEN COMPOUND AS A BLOWING AGENT AND DEXTRIN

Peter Rohringer, Schönenbuch, and René Berini, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,422
Claims priority, application Switzerland, Jun. 30, 1980, 5014/80
Int. Cl.³ B32B 33/00
U.S. Cl. 252—606 29 Claims

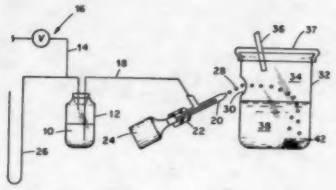
1. A fire-retardant, intumescent aqueous composition, which comprises (a) at least one water-soluble ammonium salt of a non-volatile inorganic acid, as a flameproofing agent, (b) at least one water-soluble nitrogen compound which serves as a blowing agent and splits off ammonia and carbon dioxide when heated, (c) dextrin as a binder, (d) optionally formaldehyde or a formaldehyde donor and (e) optionally, other additives.

4,382,885

METHOD FOR PRODUCING NUCLEAR FUEL

Paul A. Haas, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 257,014
Int. Cl.³ G21C 3/62
U.S. Cl. 252—635 8 Claims



1. A method for forming nuclear fuel comprising:

forming a solution wherein an actinide salt is dissolved in water;

contacting said solution with an amount of reagent sufficient to react with a first portion of said actinide salt in said solution to form a precipitate while leaving a second portion of said actinide salt dissolved in said solution;

forming drops comprising said precipitate and the solution containing the dissolved second portion of said actinide salt;

contacting said drops with ammonia gas and ammonium hydroxide in sequence to convert them to gelled spheres;

washing, drying, and calcining said gelled spheres; and

forming the calcined spheres into sintered nuclear fuel pellets.

4,382,886

METHOD FOR EXTRACTING PROPOLIS AND WATER SOLUBLE DRY PROPOLIS POWDER

Zenon M. Sosnowski, 1081 Beauty Ave., Winnipeg, Manitoba, Canada (R2P OE9)

Filed Apr. 13, 1981, Ser. No. 253,170
Int. Cl.³ C08L 93/00; A61K 17/00
U.S. Cl. 260—107 20 Claims

1. A method for extracting propolis, said method comprising the steps of:

a. selecting a quantity of raw material from the group consisting of raw propolis and unprocessed beeswax;

b. placing said quantity of raw material in a container and covering said quantity with solvent wherein about 1-1.5 liters of said solvent are added per 500 g of said quantity, and wherein said solvent is selected from the group consisting of ethyl alcohol, isopropyl alcohol, n-butyl alcohol, sec-butyl alcohol, tert-butyl alcohol, ethyl ether, benzyl alcohol, propylene glycol, dimethyl sulfoxide, ethylene glycol, n-propyl alcohol, methyl alcohol, benzyl benzoate, acetone, polyethylene glycol, glacial acetic acid, aqueous solutions of said solvents, and mixtures thereof;

c. maintaining the mixture of step b. at a temperature of about 0°–37° C. for about 1–10 days with periodic agitation to obtain a propolis-containing solution;

d. filtering said solution to obtain a propolis-containing filtrate; and

e. removing said solvent from said filtrate to obtain a dry propolis powder.

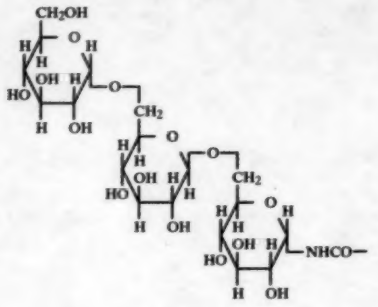
4,382,887

NOVEL GLYCOPEPTIDE AND METHODS OF ISOLATING AND USING THE SAME

Seiichi Shibata, 40-11, Takatanobaba 4-chome, Shinjuku-ku, Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 165,602
Claims priority, application Japan, Sep. 26, 1979, 54-123669
Int. Cl.³ A61K *49/00*; C07C *103/52*; C07G *7/00*
U.S. Cl. 260—112.5 R 6 Claims

1. A process of isolating a glycopeptide consisting of a sugar moiety having a structural formula



and a peptide moiety linking to the sugar moiety through N-glycoside bond, comprising steps of (1) digesting an organ of normal animal with a protein-digesting enzyme and centrifuging, of (2) digesting the supernatant liquid obtained in the step (1) with pronase and centrifuging, of (3) dialyzing the supernatant liquid obtained in the step (2), of (4) treating the non-dialyzable substance with trichloroacetic acid and centrifuging, and of (5) contacting the supernatant liquid obtained in the step (4) with non-water soluble material having negative charge and eluting the substance adsorbed on the non-water soluble material,

wherein said peptide moiety is one obtained from said organ of normal animal which is selected from the group consisting of kidney, lung, aorta, liver, spleen, heart and muscle.

4,382,888

TRYPTOPHAN DERIVATIVE AND PROCESS FOR PRODUCTION THEREOF

Sawao Murao, Sakai, and Kenichi Fukuhara, Yokohama, both of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

PCT No. PCT/JP79/00295, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO80/01069, PCT Pub. Date May 29, 1980
PCT Filed Nov. 15, 1979, Ser. No. 201,389
Claims priority, application Japan, Nov. 17, 1978, 53-142081
Int. Cl.³ C07C *103/52*; C12P *21/02*; C12N *1/20*
U.S. Cl. 260—112.5 R 1 Claim

1. N-(6-Deoxy-L-talosyloxyhydroxyphosphinyl)-L-luecyl-L-tryptophan.

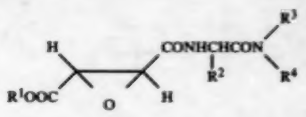
4,382,889

EPOXYSUCCINIC ACID DERIVATIVES

Masaharu Tamai, Hasuda; Takashi Adachi, Kuki; Shigeo Morimoto, Kita-Katsushika; Kiyoshi Oguma, Kitamoto; Kazunori Hanada, and Sadafumi Omura, both of Ageo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 109,410, Jan. 3, 1980, Pat. No. 4,333,879.
This application Dec. 30, 1981, Ser. No. 335,700
Claims priority, application Japan, Feb. 27, 1979, 54-22365
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 1 Claim

1. An epoxysuccinic acid derivative of the formula



wherein R^1 is hydrogen, alkali metal, alkyl having 1–2 carbon atoms, cycloalkyl having 5–6 carbon atoms or benzyl, R^2 is alkyl having 3–4 carbon atoms or benzyl, R^3 is hydrogen or methyl, and R^4 is a group of the formula

wherein R^5 is hydrogen, alkyl having 1–4 carbon atoms or said alkyl substituted with hydroxy, methylmercapto, phenyl, hydroxyphenyl, indolyl, an optionally protected carboxy, an optionally protected amino or an optionally protected guanidino, and R^6 is hydroxy, alkalimetaloxy, alkoxy having 1–2 carbon atoms, benzyloxy, amino or dimethylamino.

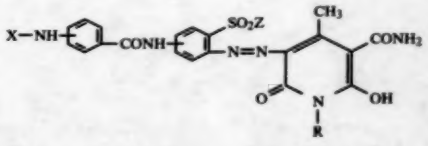
4,382,890

FIBER REACTIVE SULFO ARYL AZO N-SUBSTITUTED PYRIDONE-3-CARBOXAMIDE DYESTUFFS

Rene de Montmollin, Riehen, and Dieter Münsezahl, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 856,152, Nov. 30, 1977, abandoned, which is a continuation of Ser. No. 704,897, Jul. 13, 1976, abandoned. This application Jan. 23, 1980, Ser. No. 114,761
Claims priority, application Switzerland, Jul. 25, 1975, 9733/75; Jun. 14, 1976, 7520/76
Int. Cl.³ C09B *62/473, 62/665*; D06P *1/384, 3/10*
U.S. Cl. 260—156 4 Claims

1. An azo dye of the formula



wherein

X is α,β-dichloropropionyl, α,β-dibromopropionyl, α-chloroacryloyl or α-bromoacryloyl group;

Z is OH or 4-methyl-3-sulfophenyl; and

R is alkyl of 1 to 8 carbon atoms which is unsubstituted or substituted by methoxy, isopropoxy, dimethylamino, hydroxy or chloro;

and wherein the —CONH— group is meta or para to the azo group.

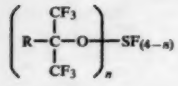
4,382,891

USE OF FLUOROALKOXYSULFUR FLUORIDES IN FLUORINATIONS

William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 148,209, May 9, 1980, Pat. No. 4,311,651.
This application Oct. 5, 1981, Ser. No. 308,656
Int. Cl.³ C07C *143/00, 147/00*; C07D *243/24*
U.S. Cl. 260—239.3 D 8 Claims

1. A process for replacing a hydroxyl group of a monofunctional or polyfunctional aliphatic primary, secondary or tertiary alcohol with fluorine, comprising reacting said alcohol with a fluoroalkoxysulfur fluoride of the formula



wherein R is selected from H, CH_3, CF_3 and C_2F_5, and n is 1 or 2.

8. A solution of lithium fluoroalkoxide of the formula

wherein R is selected from H, CH_3, CF_3, and C_2F_5 in a non-polar halocarbon solvent.

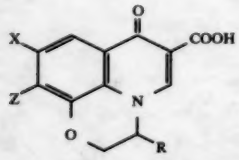
4,382,892

BENZOXAZINE DERIVATIVES

Isao Hayakawa; Tokiyuki Hiramitsu, and Yoshiaki Tanaka, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,816
Claims priority, application Japan, Sep. 2, 1980, 55-121540
Int. Cl.³ C07D *498/16*
U.S. Cl. 260—243.3 8 Claims

1. A compound having the formula (I)



(I)

wherein X is a halogen atom, R is a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms and Z represents (1) a mono-alkylamino or di-alkylamino group or (2) a cyclicamino group selected from the group consisting of azetidinyl, pyrrolidinyl, piperdinyl, morpholinyl, piperidinyl, homopiperazinyl, thiamorpholinyl and pyrazolidinyl, each of which amino groups may be substituted with a hydroxyl group, an alkyl group having 1 to 6 carbon atoms, an amino group, a hydroxyalkyl group having 1 to 6 carbon atoms or a mono- or di-alkylamino group having 1 to 6 carbon atoms in each alkyl group.

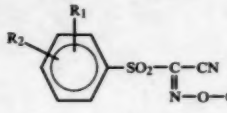
4,382,893

SULFUR-CONTAINING OXIME COMPOUNDS

Elmar Sturm, Aesch; Heinrich Schempp, Arlesheim, and Henry Martin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,123, Aug. 20, 1979, Pat. No. 4,278,613.
This application May 4, 1981, Ser. No. 260,539
Claims priority, application Switzerland, Aug. 28, 1978, 9081/78
Int. Cl.³ C07C *121/80*
U.S. Cl. 260—465 D 3 Claims

1. A compound of the formula



wherein R_1 and R_2 are each hydrogen, halogen or C_1–C_4-alkyl, and Q is a benzoyl group which is unsubstituted or mono- to tri-substituted by identical or different substituents selected from the group consisting of halogen, C_1–C_4-alkyl and C_1–C_4-alkoxy.

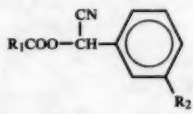
4,382,894

PRODUCTION OF α-CYANOBENZYL ESTERS

Peter Tissington; Rodney M. Giddings, and Michael T. Pearse, all of Grimsby, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

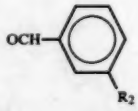
Filed Jun. 22, 1981, Ser. No. 276,113
Int. Cl.³ C07C *121/75*
U.S. Cl. 260—465 D 10 Claims

1. In a process for the production of α-cyanobenzyl esters of the general formula (I)



(I)

wherein R_1 is an optionally substituted alkyl or cycloalkyl group and R_2 is phenoxy, phenylthio or benzyl which comprises reacting substantially equimolar amounts of a benzaldehyde of the general formula II



(II)

wherein R_2 is as defined above, and an acid halide of the general formula III

$$R_1CO\ Hal \qquad \text{(III)}$$

wherein R_1 is as defined above and Hal represents chlorine or bromine, with an excess of a water soluble cyanide in a reaction medium comprising water and a substantially water-immiscible inert organic solvent, the improvement which comprises carrying out the reaction in the presence of from 100 to 1000 ppm, based on the weight of acid halide of formula III, of pyridine.

4,382,895
PREPARATION OF ALKYL SULFONATES

Edward L. Cole, Fishkill, and Robert M. Suggitt, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 97,886, Nov. 27, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 284,710

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 P 5 Claims

1. In a method for the manufacture of water-soluble petroleum sulfonates by sulfonation of an extract fraction from solvent refining of a hydrocarbon lubricating oil feedstock wherein said lubricating oil feedstock is contacted with a selective solvent for aromatic constituents of said feedstock in an extraction zone thereby forming a raffinate phase comprising non-aromatic hydrocarbons and a primary extract phase comprising aromatic hydrocarbons, said raffinate phase is separated from said primary extract phase, and at least a portion of said primary extract phase is subjected to sulfonation to produce a petroleum sulfonate, the steps comprising:

(a) cooling said primary extract phase after separation from said raffinate phase to a temperature at least 28° C. below the temperature in said extraction zone thereby forming a secondary extract phase relatively richer in multi-ring and sulfur-containing aromatic hydrocarbons and a secondary raffinate phase relatively poorer in multi-ring and sulfur-containing aromatic hydrocarbons,

(b) separating said secondary raffinate phase from said secondary extract phase,

(c) separating secondary raffinate from said secondary raffinate phase,

(d) subjecting said secondary raffinate to sulfonation by reaction with sulfur trioxide effecting conversion of a portion of said secondary raffinate to petroleum sulfonates with the concomitant formation of by-product sludge,

(e) separating sludge from the reaction product of sulfur trioxide and said secondary raffinate,

(f) contacting the resulting sludge-free reaction product with a selective solvent consisting of water and isopropyl alcohol in a second extraction zone forming a solvent-rich phase containing water-soluble petroleum sulfonates and an oil-rich phase comprising oil-soluble petroleum sulfonates and unreacted hydrocarbon constituents of said secondary raffinate,

(g) separating said solvent-rich phase from said oil-rich phase,

(h) contacting said solvent-rich phase with an aqueous alkaline sodium salt solution effecting conversion of said petroleum sulfonates to the sodium form,

(i) recovering water soluble sodium petroleum sulfonates from said solvent-rich phase from step (h), and

(j) introducing said oil-rich phase from step (f) comprising oil-soluble sulfonates and unreacted hydrocarbon constituents of said secondary raffinate into admixture with lubricating oil feedstock to said first extraction zone.

4,382,896
PROCESS FOR PRODUCING 4,4'-DIPHENYLDISULFONIC ACID AND ITS MONOPOTASSIUM SALT

Koji Nishihara; Takeshi Hashimoto; Shunsaku Tanaka, and Katsuhiko Sato, all of Wakayama, Japan, assignors to Sugai Chemical Industry Co., Ltd., Wakayama, Japan

Filed Jul. 21, 1982, Ser. No. 400,420

Claims priority, application Japan, Jul. 23, 1981, 56-114467; Jul. 23, 1981, 56-114468

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 C 13 Claims

1. A process for producing 4,4'-diphenyldisulfonic acid comprising adding a sulfonating agent to molten diphenyl at a temperature of 130°–145° C., cooling the reaction mixture to 115°–127° C. when the crystallization of 4,4'-diphenyldisulfonic acid begins in said temperature range of 130°–145° C. and maintaining the reaction mixture in this temperature range of 115°–127° C. to complete the disulfonation reaction.

4,382,897
PROCESS FOR THE PREPARATION OF TRIFLUORACETIC ACID DERIVATIVES

Werner Rudolph, and Guenter Fernschild, both of Hanover, Fed. Rep. of Germany, assignors to Kali Chemie AG, Hanover, Fed. Rep. of Germany

PCT No. PCT/EP80/00134, § 371 Date Jul. 23, 1981, § 102(e) Date Jul. 23, 1981, PCT Pub. No. WO81/01406, PCT Pub. Date May 28, 1981

PCT Filed Nov. 21, 1980, Ser. No. 287,730

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 Y 16 Claims

1. Process for the preparation of trifluoroacetyl chloride (CF_3COCl), which comprises the step of reacting 1,1,1-trifluoro-2,2,2-trichloroethane (CF_3CCl_3) with sulfur trioxide in the presence of a mercury salt and in the presence of a boron halide BX_3 (X=F, Cl, Br, I) and a halosulfonic acid HSO_3Y (Y=F, Cl, Br, I).

4,382,898
PROCESS FOR THE PRODUCTION OF AROMATIC CARBOXYLIC ACID CHLORIDES

Udo Rudolph; Dieter Freitag; Ludwig Bottenbruch, and Manfred Schmidt, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,224

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040295

Int. Cl.³ C07C *51/60*

U.S. Cl. 260—544 D 3 Claims

1. A single-stage process for the production of an aromatic carboxylic acid chloride which comprises reacting an aromatic carboxylic acid containing from 1 to 3 carboxyl groups or a mixture of such acids with 1 to 2 mols of thionyl chloride per carboxylic acid group of said aromatic carboxylic acid or mixture thereof at a temperature of from 50° to 150° C. in the presence of a catalytic amount of a tertiary phosphine oxide or the reaction product thereof with thionyl chloride.

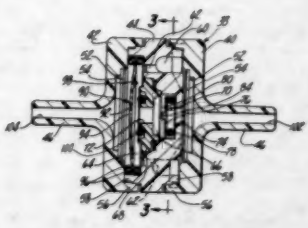
4,382,899
TEMPERATURE RESPONSIVE TIME DELAY VALVE

LeRoy B. Johnson, Perry, Mich., assignor to Schmelzer Corporation, Flint, Mich.

Filed Dec. 11, 1981, Ser. No. 329,676

Int. Cl.³ F02M *1/02*

U.S. Cl. 261—39 B 12 Claims



1. A fluid control valve assembly comprising: a housing having an inlet communicating with a source of vacuum and an outlet communicated with a device to be operated, first and second passage means communicating between said inlet and outlet, a time delay valve disposed in said first passage means and having an open position permitting free flow of fluid from

said source to said device and a closed position delaying flow from said device to said source, said second passage means bypassing said time delay valve, a temperature responsive valve in said housing having an opened position at a temperature above a predetermined minimum permitting fluid flow through said second passage means around said time delay valve and a closed position at a temperature below said predetermined minimum closing said second passage means and requiring fluid flow through said first passage means and said time delay valve.

4,382,900

CENTRIFUGAL GAS-LIQUID CONTACT APPARATUS

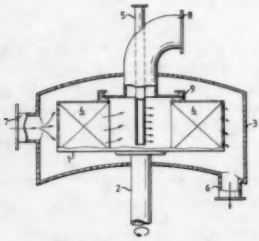
James W. Wem, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 17, 1981, Ser. No. 293,335

Claims priority, application United Kingdom, Sep. 1, 1980, 8028174

Int. Cl.³ B01F 3/04

U.S. Cl. 261—89 3 Claims



1. A centrifugal gas-liquid contact apparatus comprising:

a hollow cylindrical rotor having a longitudinal rotation axis, a cylindrical outer peripheral sidewall having means defining a first plurality of axially and angularly distributed gas inlet apertures therethrough and a second plurality of axially and angularly distributed liquid outlet apertures therethrough, respectively for the inward passage of gas and outward passage of liquid, a first end wall, and a second, opposite end wall having means defining a central aperture therethrough;

a shaft operatively connected coaxially to the rotor at said first end wall so that rotation of the shaft produces corresponding rotation of the rotor;

a liquid feed pipe projecting axially into the rotor through said central aperture in said second end wall and, within the rotor having means defining a plurality of apertures through which liquid supplied to the feed pipe may be introduced to the interior of the rotor;

a stationary gas discharge pipe coaxially communicated to said central aperture of said rotor second end wall in spacedly surrounding relation to said liquid feed pipe and via means providing a gas-tight, rotation-permitting interfacial seal between said rotor and said stationary gas discharge pipe;

an annular mass of gas/liquid permeable packing occupying the interior of the rotor in obscuring relation between said apertures of the liquid feed pipe and said apertures of the rotor outer peripheral sidewall;

wall means defining a cylindrical chamber spacedly enclosing said rotor and including first end wall, a second opposite end wall and a cylindrical sidewall;

means defining a liquid outlet conduit from said cylindrical chamber;

means defining a gas inlet conduit through said chamber cylindrical sidewall, said gas inlet conduit having an open end aimed towards said rotor cylindrical sidewall;

the liquid outlet apertures being distributed among the gas inlet apertures so that many of the liquid outlet apertures are neighbored by gas inlet apertures and vice versa;

said rotor cylindrical outer peripheral sidewall having an inner face;

means defining at least one catchment region occupying at least forty percent of said inner face of said rotor sidewall, said at least one catchment region being contiguous with at least one of said liquid outlet apertures but being non-contiguous with said gas inlet apertures, said at least one catchment region comprising channel means formed in said inner face of said rotor sidewall, each such channel means being oriented to facilitate flow of liquid impinging thereon toward said at least one liquid outlet aperture that is contiguous therewith.

4,382,901

MASS TRANSFER EQUIPMENT

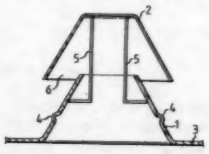
Mark E. Thomas, Ashford, England, assignor to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 244,307, Mar. 16, 1981, abandoned, which is a continuation of Ser. No. 76,390, Sep. 17, 1979, abandoned. This application Aug. 2, 1982, Ser. No. 404,065

Claims priority, application United Kingdom, Oct. 5, 1978, 39571/78

Int. Cl.³ B01F 3/04

U.S. Cl. 261—114 A 4 Claims



1. Mass transfer equipment comprising:

(a) a base having at least one riser with inwardly and upwardly elongated sloping sides leading to an aperture, said riser having a height at least equal to a head of liquid maintained on a tray;

(b) a valve cap positioned above the aperture on each riser to form a valve therewith, said valve cap comprising:

(1) an upper section disposed over the aperture, and

(2) elongated sides sloping outwardly and downwardly therefrom to overlap the sloping sides of the riser, said upper section and said elongated sides co-acting to redirect vapour passing up through the riser downward to eject said vapour through a liquid surrounding the riser at an angle requiring said vapour to redirect itself through an angle of more than 90° to bubble up through said liquid, said riser inhibiting weeping in said valve, said valve cap being moveable relative to said riser to provide a vapour flow passage of variable cross-section disposed therebetween, the cross-section of said vapour flow passage increasing in response to higher vapour loads to provide increased contact area between said vapour and said liquid to maintain operating efficiency; and

(c) a plurality of legs extending downwardly from said upper section, said legs having stops attached thereto to limit the movement of said valve cap to such an extent that the lower edge of the sloping sides of said valve cap is never above the upper edge of the sloping sides of said riser to maintain said downward ejection of said vapour into said liquid at all flow rates of said vapour; said legs co-acting with said stops to provide a maximum spacing between said riser and said valve cap to set bounds to said variation in said displacement of said valve cap, there being a projection from the elongated sides of either said valve cap or said riser to provide a minimum spacing between said

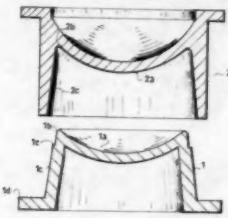
valve cap and said riser to minimize sticking of said valve cap to said tray.

4,382,902

METHOD FOR MOLDING CONTACT LENSES USING ULTRAVIOLET ENERGY

Bernard Feurer, Saint-Orens-de-Gameville, France, assignor to Alcon Pharmaceuticals Limited, Cham, Switzerland

Filed Feb. 27, 1981, Ser. No. 238,962
Claims priority, application France, Feb. 28, 1980, 80 04750
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.4 **11 Claims**



1. A method for producing a finished contact lens comprising:

providing a mold of male and female parts substantially transparent to electromagnetic energy within the range of wavelengths of about 1 micron to 10^{-6} micron, said mold having a heat capacity significantly greater than the amount of the composition being molded whereby heat generated during molding may be dissipated without raising the temperature of said mold above about 40° C., each said male and female part having a unitary mold surface rigid at temperatures below about 40° C., said parts being adapted to interfit with the peripheries of said mold surfaces in contact so as to form an airtight closed mold cavity, said unitary male mold surface and said unitary female mold surface alone forming in its entirety the final undeformed shape of the lens to be molded, introducing a polymerizable lens forming monomer into said mold cavity and interfitting said mold parts so as to close said mold cavity, irradiating said monomer containing mold substantially uniformly with electromagnetic energy at a wavelength within the range of about 1 micron to 10^{-6} micron and at a power density such as to keep the temperature of said mold below about 40° C. so as to polymerize said monomer without detachment of the lens material from said mold surfaces and without deformation of said mold surfaces, and removing the lens from said mold.

4,382,903

METHOD FOR MANUFACTURING A METAL POWDER BY GRANULATION OF A METAL MELT

Hans G. Larsson, and Erik Westman, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

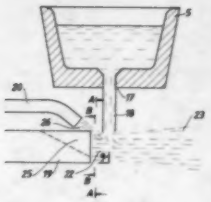
Continuation-in-part of Ser. No. 58,766, Jul. 19, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,370
Int. Cl.³ B01J *2/04*
U.S. Cl. 264—12 **13 Claims**

1. A method of forming a metal powder which includes

(a) forming a vertically downwardly moving tap stream of molten metal,

(b) directing a trough-shaped first jet of gas towards the side of said stream so as to impact therewith and generate droplets of molten metal and thereafter cause the droplets to be thrown in a substantially parabolic trajectory, said trough-shaped jet of gas having an open top and a vertically oriented plane of symmetry therethrough, said plane of symmetry of said trough-shaped jet intersecting said stream,

(c) directing a second jet of gas obliquely downwardly towards the open top of said trough-shaped first jet of gas so as to prevent molten metal droplets from moving in a



second jet of gas having the same general direction of flow as said trough-shaped first jet of gas, and

(d) rapidly cooling the droplets of molten metal to form the metal powder as said droplets travel in said substantially parabolic trajectory.

4,382,904

ELECTRODE BACKING LAYER AND METHOD OF PREPARING

Lawrence J. Gestaut, Painesville, Ohio, and Frank Solomon, Great Neck, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,582
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—49 **9 Claims**

1. A method for preparing an electrically conductive, hydrophobic, cohesive, self-sustaining electrode wetproofing sheet for use with an oxygen cathode comprising the steps of:

intimately mixing from about 50 to about 80 wt. percent partially fluorinated carbon black particles of the formula CF_x, where x is from 0.1 to 0.18, with from about 20 to about 50 wt. percent of liquid dispersed polytetrafluoroethylenated particles, to form a polytetrafluoroethylenated carbon black mix that can include a wetting agent;

drying the polytetrafluoroethylenated carbon black mix,

removing any wetting agent associated with forming the polytetrafluoroethylenated carbon black mix;

chopping the polytetrafluoroethylenated carbon mix to form a granular mix, and then

forming the granular mix into a sheet by one of passing said granular mix through rollers heated to between about 65° C. and 90° C. and by dispersing said granular mix in a liquid dispersion medium capable of wetting said granular mix then filtering said granular mix from said dispersion on a salt bed-filter medium.

4,382,905

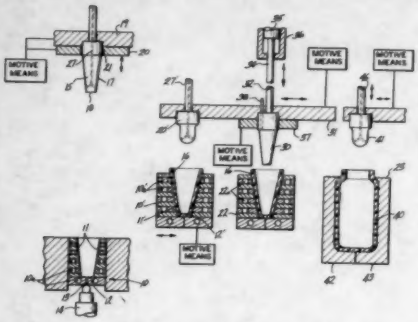
INJECTION MOLD DWELL CYCLE

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Filed Jul. 31, 1981, Ser. No. 288,950
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—520 **7 Claims**

1. In a method for the preparation of oriented hollow articles of moldable organic plastic material in a rapid operating cycle with desirable optical properties in said hollow articles by injection molding a parison in an injection mold, tempering the parison in a tempering station to obtain uniform orientation conditions and orienting and expanding the tempered parison to obtain the hollow article, the improvement which comprises: rapidly cooling the parison in the injection mold until its inside temperature drops below that which corresponds to the highest rate of crystallization for the given plastic material; rapidly and prematurely removing the parison from the injec-

tion mold while the parison has an unequal temperature distribution and before the parison attains an average temperature suitable for orientation; and rapidly transferring the parison to a holding station between the injection mold and the tempering station within that length of time during which little or no visable crystallization can occur according to the crystallization rate applicable to the inside of the parison for continuation of the injection mold cooling function and for continuing to



alter the heat content of the parison to attain an average temperature suitable for orientation with an unequal cross-sectional temperature distribution across the walls of the parison, wherein said average temperature suitable for orientation is attained in the parison prior to the tempering of the parison in a tempering station thus freeing the injection mold for the formation of a next parison, and thereby obtaining a rapid operating cycle while avoiding undesirable opacity due to crystalline regions in said hollow articles.

4,382,906

METHOD OF AND AN APPARATUS FOR THE EVALUATION OF BURNED-OUT NUCLEAR FUEL ELEMENTS

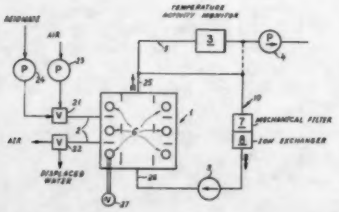
Rainer Ambros, Biblis, and Gottfried Paffrath, Worms, both of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitatswerk AG, Essen, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,171

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931336

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—247 **6 Claims**



1. A method of handling burned-out fuel elements from a nuclear reactor core, said method comprising the steps of:

(a) introducing a plurality of said fuel elements into an inspection vessel immersed in a bath;

(b) sealing said vessel from said bath;

(c) recirculating deionized water through the closed vessel at a constant rate;

(d) withdrawing a stream of deionized water from said vessel and measuring substantially continuously the activity of at least one radionuclide in said stream as a function of temperature, thereby detecting a defect in a fuel element in said vessel;

(e) ultrasonically dislodging contaminants from said fuel elements into the deionized water circulated in step (c); and

(f) removing said contaminants from the recirculated water of step (c).

4,382,907

LIQUID METAL COOLED NUCLEAR REACTOR

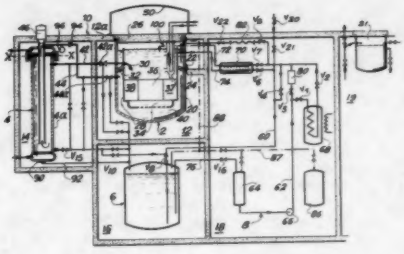
Marcel Robin, Sevres, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 22, 1979, Ser. No. 51,521

Claims priority, application France, Jun. 23, 1978, 78 18822

Int. Cl.³ G21C *19/32*

U.S. Cl. 376—283 **6 Claims**



1. A liquid metal cooled nuclear reactor steam generating system without an intermediate sodium system comprising:

(a) a reactor vessel containing a reactor core, and associated neutron shields as well as liquid metal coolant, an inert gas blanket with said reactor vessel being placed within a safety jacket;

(b) at least one heat exchanger located externally of said reactor vessel in order to effect heat exchange between said liquid metal and liquid water thus turned to steam;

(c) piping means for establishing a two-way communication between said reactor vessel and said heat exchanger or heat exchangers;

(d) a main storage tank connected to said reactor vessel for receiving said liquid metal and said inert gas;

(e) said main storage tank being provided with a system of pipes consisting of at least:

(i) one first overflow pipe to connect the top portion of the reactor vessel and the bottom of said storage tank,

(ii) a second pressure-equalizing pipe having a diameter large enough to take care of sudden pressure differences to connect the top portion of the reactor vessel and the top portion of the main storage tank, said pipes being fitted with valves so as to ensure that under steady state operating conditions, said main storage tank communicates with said reactor vessel through said first and second pipes;

(iii) a third pipe for filling said main storage tank with liquid metal, said third pipe connecting an external source with said main storage tank;

(iv) a fourth pipe for connection with inert gas storage means of tank and said main storage tank;

(v) a fifth pipe to connect between the interior of said storage tank and the reactor vessel, said fifth pipe being fitted with means for circulating and purifying the liquid metal; and

(f) a containment structure constituted by controlled-atmosphere compartments which contain said reactor, heat exchanger and main storage tank to provide radiation protection for operating personnel and provide protection against impacts of external origin;

(g) said heat exchanger comprising an outer shell for the

circulation of said liquid metal, said shell being provided with a safety jacket and a discharge pipe to connect with the interior of said main shell through a bursting disc which opens abruptly in the event of abnormal overpressure within said shell, said discharge pipe arranged as to have its opening at the top portion of said main storage tank, and wherein the means for establishing a communication in the heat exchanger-reactor vessel direction are fitted with a valve which is closed in the event of an abnormal pressure drop within said shell as a result of the abrupt opening of said bursting disc.

4,382,908

AFTER-HEAT REMOVAL SYSTEM FOR A GAS-COOLED NUCLEAR REACTOR

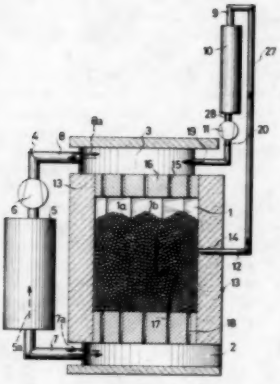
Klaus Petersen, Herzogenrath-Kohlscheid, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,331

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025336

Int. Cl.³ G21C *15/18*

U.S. Cl. 376—299 **8 Claims**



1. In a gas-cooled nuclear reactor having a reactor core provided with a top reflector, a bottom reflector and a side reflector surrounding a pile of spherical fuel elements, at least one operating loop for primary cooling of said core and including a gas inlet at said top reflector above said core, a gas outlet at said bottom reflector below said core, at least one primary heat exchanger, and means for circulating primary coolant gas from said inlet through said core to said outlet and from said outlet through said heat exchanger to said inlet, the improvement which comprises an after-heat removal system for removing heat from said core upon inactivation of said operating loop, said after-heat removal system comprising at least one after-heat removal loop including:

means forming an outlet passage in said side reflector spaced from said inlet and said outlet and opening within the pile of balls;

a suction duct connected to said outlet for drawing hot cooling gas from said core;

an after-heat cooler connected to said suction duct for cooling the hot cooling gas; and

a return duct connecting said cooler with said inlet for returning relatively cold cooling gas thereto.

4,382,909

GOLD FREE ALLOYS FOR FIRING ON CERAMIC COMPOSITIONS

Gerhard Zwingmann, Bruchkobel, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,042

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009650

Int. Cl.³ C22C *30/00, 19/07, 5/04*

U.S. Cl. 420—588 **22 Claims**

22. A gold free alloy suitable for firing on ceramic compositions for dental purposes consisting essentially of 1–70 weight % palladium, 0.1–35 weight % chromium, also containing an element which is scandium, yttrium, lanthanum, another rare earth or mixture of such elements, such element or mixture of elements being present in an amount of up to 8 weight %, and containing aluminum, silicon, tin, indium, gallium, or mixture thereof, said aluminum, silicon, tin, indium, gallium, or mixture thereof being present in an amount of up to 5 weight %, and the balance consisting essentially of cobalt.

4,382,910

PROCESS AND APPARATUS FOR THE CONTINUOUS REMOVAL OF UNDESIRABLE COMPONENTS OF SOLID PARTICLES BY A SOLVENT APPLIED IN COUNTERFLOW

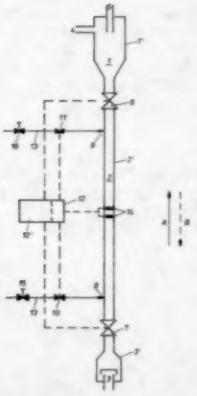
Bernard Stofer, Turgi, Switzerland, assignor to Gesellschaft zur Forderund der Forschung an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

Division of Ser. No. 7,375, Jan. 29, 1979. This application Nov. 14, 1980, Ser. No. 206,950

Claims priority, application Switzerland, Mar. 3, 1978, 2296/78

Int. Cl.³ G21G *21/00*

U.S. Cl. 422—62 **6 Claims**



1. Apparatus for the continuous elimination of undesirable components of solid particles by a solvent streaming in counterflow through a bed of solid particles, the improvement comprising a tube, a respective inlet for a solvent at each end of the tube and a respective, essentially coaxial valve for charging and discharging solid particles; an essentially coaxial decanter vessel disposed above the said valve for charging solid particles, a charging opening for solid particles and an overflow for solvent provided for said decanter vessel; a discharging device arranged under the lower outlet valve for solid particles and a valve arrangement connected to the said inlets of solvent for an alternatable supply of solvent into the tube through one or the other inlet.

4,382,911
HYDRATION OF LIME

Anthony R. Pennell, Gravesend, and John Carpenter, Rochester, both of England, assignors to Blue Circle Industries Limited, London, England

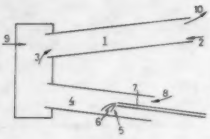
Continuation-in-part of Ser. No. 836,780, Sep. 26, 1977, which is a continuation-in-part of Ser. No. 747,928, Dec. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 628,372, Nov. 3, 1975, abandoned

This application Jan. 4, 1979, Ser. No. 807

Claims priority, application United Kingdom, Nov. 11, 1974, 48692

Int. Cl.³ C01F *11/06*

U.S. Cl. 423—175 **4 Claims**



1. In the process of treating calcareous matter in an apparatus consisting essentially of a rotary kiln, a rotary cooler connected thereto and means for firing the kiln and for passing air through the apparatus, which process comprises feeding calcareous matter into one end of the rotary kiln, introducing fuel and air for combustion into the other end of the rotary kiln and calcining said calcareous matter by burning the fuel in the rotary kiln to produce lime, allowing said lime to fall from an outlet in the fuelled end of the rotary kiln directly into the adjacent end of the rotary cooler, passing the lime through the rotary cooler for recovery thereof at the other end of the cooler and subsequent hydration, introducing air for cooling into said other end of the cooler and passing the air in counterflow to the lime through the cooler and into the kiln to provide said air for combustion; the improvement which comprises:

introducing a water supply pipe through said other end of the rotary cooler and longitudinally into an intermediate zone within the cooler, discharging water from the pipe into the lime in the cooler whereby the lime in said zone is dry-slaked in said cooler and hydrated lime is obtained at the solids outlet of the cooler.

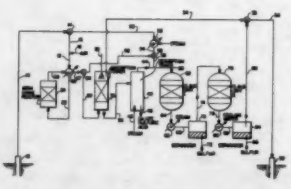
4,382,912
SELECTIVE COMBUSTING OF HYDROGEN SULFIDE IN CARBON DIOXIDE INJECTION GAS

Ajay M. Madgavkar, Irvine, Calif., and Harold E. Swift, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 10, 1981, Ser. No. 300,886

Int. Cl.³ B01D *53/36*; C01B *17/04*

U.S. Cl. 423—224 **27 Claims**



1. A process for purifying a hydrogen sulfide-containing carbon dioxide gas stream, which comprises contacting said gas stream, which consists essentially of hydrogen sulfide, from 0 to about 25 mol percent light hydrocarbons and at least 20 mol percent carbon dioxide, with an iron catalyst under conditions to selectively oxidize said hydrogen sulfide to form a sulfur dioxide-containing gas stream substantially free of organic sulfur compounds.

4,382,913
PROCESS AND AN AGENT FOR THE ADSORPTION AND CATALYTIC DECOMPOSITION OF FOUL-SMELLING INTESTINAL GASES

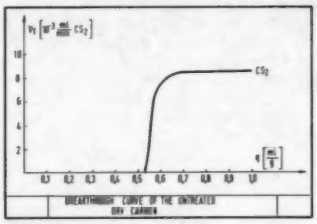
Horst Chmiel, Leonberg, and Günter Hellwig, Stuttgart, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,413

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013255

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—230 **6 Claims**



1. A process for the adsorption and catalytic decomposition of foul-smelling intestinal gases, wherein the intestinal gases are passed through a highly specific adsorbent which, out of a mixture of water vapour, methanol, carbon monoxide and carbon dioxide and various sulfur-containing gases catalytically decomposes and adsorbs only the sulfur compounds, the highly specific adsorbent comprising an inert, highly porous solid having a specific surface according to BET of from 900 to 1800 m^2/g, as determined by argon adsorption at −196° C., or pyrogenic silicon dioxide having a specific surface according to BET of from 50 to 500 m^2/g, as determined by argon adsorption at −196° C., the surface of the solids being covered with from 0.1 to 5% by weight of aluminium, zinc, chromium or iron, based on the weight of the solid having a specific surface of 1000 m^2/g.

4,382,914
PROCESS FOR PREPARING CYCLIC PHOSPHONITRILIC CHLORIDE OLIGOMERS

Kiyoshi Horie, Takasago; Yoshiaki Morita, Itami; Yukio Mikamori, Kobe; Masaharu Suzuki, Takatsuki, and Susumu Yano, Takasago, all of Japan, assignors to Nippon Fine Chemical Company, Ltd., Japan

Filed Mar. 16, 1981, Ser. No. 244,231

Claims priority, application Japan, Jun. 11, 1980, 55-79291; Oct. 31, 1980, 55-154073

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **34 Claims**

1. A process for preparing cyclic phosphonitrillic chloride oligomers characterized by the combination of: the first step of reacting phosphorous pentachloride with ammonium chloride in an inert organic solvent in the presence of a catalyst comprising at least one of (a) chlorides of bivalent metals and (b) organic acid salts of bivalent metals, the second step of distilling off the solvent from the resulting reaction mixture to obtain a reaction product consisting essentially of cyclic phosphonitrilic chloride oligomers, the third step of contacting a solution of the reaction product in at least one solvent selected from the group consisting of aliphatic hydrocarbons and ethers with water at a temperature of about 40° to about 100° C., and the

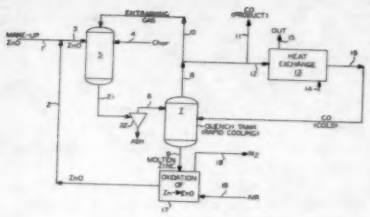
fourth step of separating the resulting aqueous layer from the organic layer, and isolating from the organic layer a mixture of cyclic phosphonitrilic chloride oligomers having outstanding polymerization properties and consisting essentially of the trimer and tetramer of the phosphonitrilic chloride.

4,382,915

QUENCHING OF ZNO-CHAR GASIFICATION

Pasupati Sadhukhan, Katy, Tex., and William G. Billings, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 13, 1981, Ser. No. 310,718
Int. Cl.³ C10J *3/46*
U.S. Cl. 423—415 A **6 Claims**



1. A process for the gasification of solid carbon containing materials which comprises:

(a) heating in an entrainment bed reaction means under endothermic reaction conditions finely divided carbon containing particles with finely divided zinc oxide employing as heat source hot entraining sweep gas, thereby producing a hot gaseous stream comprising zinc, carbon monoxide, and traces of carbon dioxide,

(b) quenching said hot gaseous stream with cool recycle carbon monoxide, thereby condensing said zinc as molten zinc metal while avoiding substantially the formation of blue powder, and producing an off-gas stream of hot carbon monoxide,

(c) reoxidizing said molten zinc by contact with air in oxidation contactor means, thereby producing finely divided zinc oxide for recycle to said step (a), and nitrogen as a second off-gas stream,

(d) further heating a portion of said off-gas stream of hot carbon monoxide from said step (b) by indirect heat exchange with said oxidation contactor means step (c), thereby producing said hot entraining sweep gas for recycle to said step (a) to provide heat thereto,

(e) cooling by indirect heat exchange means a further portion of said hot off-gas carbon monoxide stream from said step (b) to provide said cool carbon monoxide quench gas, and

(f) withdrawing a further portion of carbon monoxide gas as product.

4,382,916

METHOD OF PREPARING HYDROCHLORIC ACID AND HIGH PURITY FERROUS SULFATE HYDRATE CRYSTALS FROM HYDROCHLORIC ACID WASTE PICKLE LIQUOR

Brazier K. Beecher, Wyandotte, Mich., assignor to Voss Steel Corporation, Taylor, Mich.

Filed Oct. 7, 1981, Ser. No. 309,284
Int. Cl.³ C01B *7/08*; C01G *49/14*
U.S. Cl. 423—481 **11 Claims**

1. A method of recovering hydrochloric acid and high quality ferrous sulfate from waste pickle liquor containing ferrous chloride including the steps of:

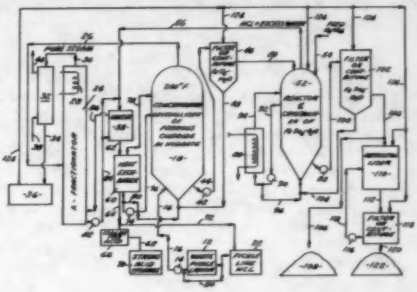
concentrating said waste pickle liquor in a concentrator crystallizer by boiling off water and free hydrogen chloride as vapor until ferrous chloride precipitates as a crystalline hydrate;

directing said water and hydrogen chloride vapor from said concentrator crystallizer to a fractionator and separating the vapor into high purity water and relatively weak hydrochloric acid product;

filtering said ferrous chloride crystalline hydrate after it is removed from the concentrator to separate the ferrous chloride crystals from the filtrate;

directing said filtrate into said concentrator and recycling the filtrate with the liquor in said concentrator;

directing said ferrous chloride crystals into a reactor;



reacting said ferrous chloride crystals with sulfuric acid in said reactor to form water and hydrogen chloride vapors and crystalline ferrous sulfate monohydrate;

condensing the hydrogen chloride and water vapors from said reactor to form a strong hydrochloric acid product; and

filtering said crystalline ferrous sulfate monohydrate after it leaves said reactor;

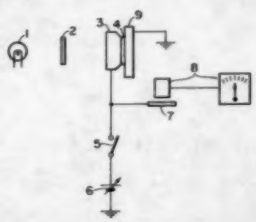
said first mentioned filtering step being provided on said ferrous chloride upstream of said reactor and said second filtering step being provided on said ferrous sulfate downstream of said reactor to reduce the impurities therein.

4,382,917

PROCESS FOR PREPARING CADMIUM SULFIDE FOR ELECTROPHOTOGRAPHY AND PRODUCT THEREOF

Kiyoshi Suzuki, Yokohama, and Hirokuni Kawashima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,482
Claims priority, application Japan, Dec. 28, 1979, 54-171356
Int. Cl.³ C01B *17/00*; C09K *11/10*; H01L *31/00*; H01B *1/06*
U.S. Cl. 423—561 B **3 Claims**



1. A process for preparing cadmium sulfide adapted for use in an electrophotographic photosensitive member which comprises:

(a) preparing a cadmium sulfide feed by firing precipitated cadmium sulfide containing doping impurities to enhance photoconductivity thereof,

(b) heating said feed in a solution of a compound capable of generating sulfur when heated under conditions sufficient to generate said sulfur, and

(c) recovering a cadmium sulfide having a photoconductivity greater than that of said cadmium sulfide feed, which exhibits rapid photodecay and uniform image quality after prolonged inactivity.

4,382,918

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A STABILIZED IRON CHELATE SOLUTION

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 24, 1981, Ser. No. 324,359

Int. Cl.³ C01B *17/04*; B01D *53/34*

U.S. Cl. 423—573 R **28 Claims**

1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of a reactant selected from the group consisting of oxidizing iron chelate compounds, and mixtures thereof, and a stabilizing amount of a composition selected from the group consisting of sodium thiocyanate, sodium dithionite, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;

(b) removing at least a portion of the crystalline sulfur from the aqueous admixture;

(c) regenerating the aqueous admixture in a regeneration zone to produce a regenerated reactant;

(d) returning aqueous admixture containing regenerated reactant from the regeneration zone to the contacting zone.

4,382,919

COMPOSITION FOR TREATMENT AND PREVENTION OF MALODOROUS GENERATING SKIN CONDITIONS

Richard J. Alonso; Ara Nersesian, both of Livingston; Val F. Cotty, and S. Mark Henry, both of Westfield, all of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,255

Int. Cl.³ A61K *7/00, 7/32, 31/74, 31/745*

U.S. Cl. 424—65 **10 Claims**

1. A method for the treatment and prevention of symptoms of conditions characterized by offensive odor of the body which comprises topically applying to the regions of the body subject to offensive odor a composition comprising:

(a) from 1 to 30% by weight of a non-toxic, high molecular weight alginic acid, having a molecular weight in the range of from 15,000 to 900,000; and

(b) from 70 to 99% by weight of a pharmaceutical carrier said alginic acid being applied to said body region in an amount effective to arrest or prevent the development of offensive odor.

4,382,920

HORMONE-LIKE PEPTIDES AND USE THEREOF

Friedrich G. Reinhard, Dorfen, Fed. Rep. of Germany, assignor to Perignon Investments Ltd., Grand Cayman, Cayman Islands

Continuation-in-part of Ser. No. 82,738, Oct. 9, 1979, which is a continuation-in-part of Ser. No. 50,408, Jun. 20, 1979, abandoned, which is a continuation of Ser. No. 916,874, Jun. 19, 1978, abandoned. This application Apr. 2, 1980, Ser. No. 136,670

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **8 Claims**

1. A hormone-like peptide having antimetabolic activity comprising a peptide of the formula:

a-X_1-arg-val-X_2-gln-val-gly-X_3-X_4-pro-X_5-$(gly)_m$-$(asp)_m$-c,

and wherein,

a is a member of the group consisting of a free amino group, and an acylated amino group;

X_1 is a member of the group consisting of ser, gln, glu, and pyr-glu;

X_2 is a member of the group consisting of lys and ser;

X_3 is a member of the group consisting of ser and asn;

X_4 is a member of the group consisting of ser, gln, and lys;

X_5 is a member of the group consisting of gln and ser;

c is a member of the group consisting of a free acid group and an acid amide group;

n=0 or 1 and,

m=0 or 1, provided that when n=0, m=0.

7. A process of decreasing oxygen consumption in animals comprising administering a pharmacologically effective amount of the peptide of claim 1 to said animal.

4,382,921

METHOD FOR TREATMENT OF PSORIASIS

Gerhard Weber, Virchowstrasse 5, 8500 Nürnberg, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,530

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017390; Apr. 11, 1981, 3114824

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **5 Claims**

1. A method for treating psoriasis comprising administering an effective amount of an antagonist of the somatotropic hormone.

4,382,922

PEPTIDES AFFECTING GONADAL FUNCTION

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 182,595, Aug. 29, 1980. This application Mar. 1, 1982, Ser. No. 353,237

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **8 Claims**

1. A compound selected from the class defined by the formula:

p-Glu-His-Trp-Ser-Tyr-R_1-Leu-Arg-Pro-NH-CH_2-CH_3

and its nontoxic salts, and

X^1-p-Glu-His(X^2)-Trp-Ser(X^3)-Tyr-(X^4)-R_1-Leu-Arg(X^5)-Pro-X^6

wherein R_1 is selected from the group consisting of methyl-D-Phe, nitro-D-Phe and methoxy-D-Phe; X^1 is either hydrogen or an α-amino protecting group; X^2 is a protecting group for the imidazole nitrogen atom selected from the group consisting of Tos, benzyl, trityl, 2,2,2-trifluoro-1-benzyloxycarbonylaminoethyl, 2,2,2-trifluoro-1-*t*-rt-butyloxycarbonylaminoethyl and 2,4-dinitrothiophenyl; X^3 is a protecting group for the alcoholic hydroxyl group of Ser selected from the group consisting of acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, benzyl and 2,6-dichlorobenzyl; X^4 is a protecting group for the phenolic hydroxyl group of Tyr selected from the group consisting of tetrahydropyranyl, tert-butyl, trityl, benzyl, benzyloxycarbonyl, 4-bromobenzyloxycarbonyl and 2,6-dichlorobenzyl; X^5 is a protecting group for the nitrogen atoms of Arg selected from the group consisting of nitro, Tos, benzyloxycarbonyl, adamantyloxycarbonyl, and BOC, or is hydrogen; and X^6 is selected from the group consisting of ethylamine, and O—CH_2—[resin support].

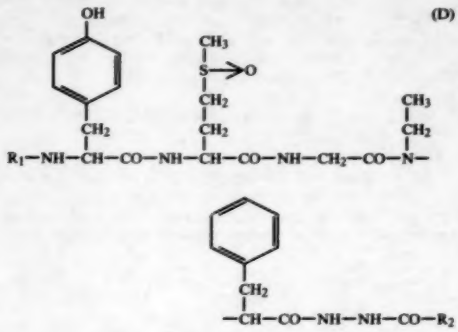
4,382,923

TETRAPEPTIDE ACYLHYDRAZIDES, THEIR PRODUCTION AND USE

Masahiko Fujino, Hyogo; Mitsuhiro Wakimasu, Osaka, and Kiyohisa Kawai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 15, 1981, Ser. No. 311,899
Claims priority, application Japan, Oct. 24, 1980, 55-149848
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 12 Claims

1. A compound of the formula:



(D)

wherein R_1 is hydrogen or methyl, R_2 is lower alkyl; or a pharmacologically acceptable acid addition salt thereof.

4,382,924

PALATABLE COMPOSITION CONTAINING OIL OR OIL-LIKE MATERIALS

Kenneth G. Berling, and Thomas G. Crosby, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 25, 1980, Ser. No. 162,961
Int. Cl.³ A61K 31/72, 31/225, 31/23; C07H 13/04
U.S. Cl. 424—180 11 Claims

1. A liquid pharmaceutical composition in oral dosage from comprising from about 25% to about 99.9% of an edible oil or oil-like pharmaceutical agent selected from polyol fatty acid esters having at least 4 fatty acid ester groups, such fatty acid having from about 8 to about 22 carbon atoms; made more palatable by incorporating in said pharmaceutical composition from about 0.001% to about 5% of a highly potent, lipid soluble sweetener, and from about 0.1% to about 5% of a lipid soluble flavorant.

4,382,925

E-5-(2-HALOGENOVINYL)-2'-DEOXYCYTIDINES

Erik de Clercq; Gabriel A. Verhelst, both of Louvain, Belgium; Albert S. Jones, and Richard T. Walker, both of Birmingham, England, assignors to The University of Birmingham, Birmingham, England and Stichting Rega V.Z.W., Louvain, Belgium

Filed Oct. 2, 1980, Ser. No. 193,251
Claims priority, application United Kingdom, Oct. 3, 1979, 7934248
Int. Cl.³ A61K 31/70; C07H 19/08
U.S. Cl. 424—180 4 Claims

1. E-5-(2-halogenovinyl)-2'-deoxycytidines selected, in particular, from the group consisting of E-5-(2-bromovinyl)-2'-deoxycytidine and E-5-(2-iodovinyl)-2'deoxycytidine.

3. A method of treating herpes simplex infections, which comprises administering a therapeutically effective amount of E-5-(2-halogenovinyl)-2'-deoxycytidine to a patient suffering from herpes simplex infection.

4. An antiviral pharmaceutical composition having special usefulness for treatment of herpes simplex infections, said pharmaceutical composition comprising an effective amount of E-5-(2-halogenovinyl)-2'-deoxycytidine, selected in particular from the group consisiting of E-5-(2-bromovinyl)-2'-deoxycytidine and E-5-(2-iodovinyl)-2'-deoxycytidine with a pharmaceutically acceptable excipient.

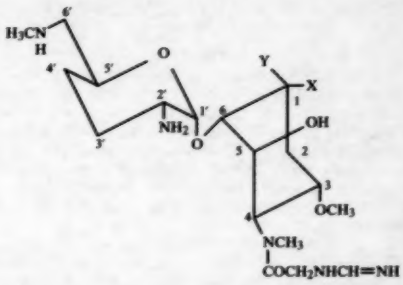
4,382,926

FORMIMIDOYL A AND B USEFUL AS SEMI-SYNTHETIC AMINOGLYCOSIDIC ANTIBIOTICS

Hamao Umezawa; Yoshiro Okami, both of Tokyo, and Shinichi Kondo, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed Mar. 16, 1981, Ser. No. 244,232
Claims priority, application Japan, Apr. 1, 1980, 55-41184; Aug. 6, 1980, 55-107201
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 424—181 5 Claims

1. Formimidoylistamycins A and B of formula (I):



(I)

wherein X represents an amino group and Y represents a hydrogen atom for formimidoylistamycin A or X represents a hydrogen atom and Y represents an amino group for formimidoylistamycin B, and their acid addition salts.

5. A method for inhibiting the bacterial growth which comprises administering an antibacterially effective amount of at least one of formimidoylistamycin A, formimidoylistamycin B and pharmaceutically acceptable acid-addition salts thereof to an animal susceptible to the bacterial growth.

4,382,927

PHOSMET-DIFLUBENZURON INSECTICIDAL COMPOSITION

Esmeralda R. Sherman, Pacifica, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 13, 1981, Ser. No. 282,469
Int. Cl.³ A01N 57/10, 47/28, 57/16
U.S. Cl. 424—200 8 Claims

1. An insecticidal composition comprising insecticidal amounts of phosmet and diflubenzuron in a weight ratio of phosmet:diflubenzuron of from about 3:1 to about 1:3.

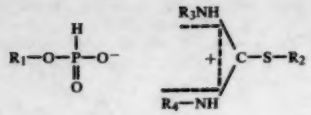
4,382,928

FUNGICIDAL COMPOSITIONS

Jean Abblard, St. Didier au Mt. D'Or; Jean-Michel Gaulliard, Orlienas, and Guy Lacroix, Lyons, all of France, assignors to Rhone-Poulenc Agrochimie, France

Continuation-in-part of Ser. No. 17,945, Mar. 6, 1979, abandoned. This application Mar. 18, 1980, Ser. No. 131,400
Claims priority, application France, Mar. 16, 1978, 78 08237
Int. Cl.³ A01N 57/00
U.S. Cl. 424—211 17 Claims

1. A fungicidal and bactericidal composition for combatting fungal and bacterial diseases in plants, which contains an effective amount of a compound of the formula:



in which

R_1 is hydrogen or an alkyl radical containing from 1 to 6 carbon atoms,

R_2 is an alkyl radical containing from 1 to 18 carbon atoms, R_1 and R_2 can additionally form an ethylene or propylene chain which is optionally substituted by alkyls containing from 1 to 3 carbon atoms, and

R_3 and R_4, which are identical or different, are hydrogen, an alkyl radical containing from 1 to 18 carbon atoms, a cycloalkyl radical containing from 3 to 7 carbon atoms, an alkenyl radical containing from 3 to 18 carbon atoms, the phenyl radical or the benzyl radical, in association with an inert solid carrier which is acceptable in agriculture.

4,382,929

THIOPHENE DERIVATIVES AND THEIR PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

John Bradshaw; Duncan B. Judd, both of Ware; Barry J. Price, Hertford, and John W. Clitherow, Sawbridgeworth, all of England, assignors to Glaxo Group Limited, London, England

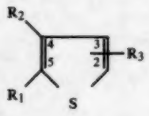
Filed Oct. 23, 1980, Ser. No. 200,007

Claims priority, application United Kingdom, Oct. 23, 1979, 7936766; Feb. 29, 1980, 8006940

Int. Cl.³ C07D *417/06;* A61K *31/38*

U.S. Cl. 424—246 **10 Claims**

1. A compound of formula (I)

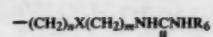


(I)

and physiologically acceptable salts and hydrates thereof, in which one of R_1 and R_2 represents hydrogen, halogen or a C_{1-4} alkyl group which may be optionally substituted by hydroxy or C_{1-4} alkoxy, and the other represents the group R_4R_5NAlk- in which R_4 represents hydrogen, C_{1-10} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, ar C_{1-6} alkyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; heteroaralkyl wherein the heteroaryl portion is a furyl, thienyl, pyrrolyl, pyridinyl, pyrimidinyl, triazinyl, oxazolyl, triazolyl or thiazolyl ring which may be unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di C_{1-6} alkylamino C_{1-6} alkyl or halogen, and the alkyl portion of the heteroaralkyl group is a straight or branched C_{1-4} alkyl chain, and the heteroaryl ring is linked to the alkyl portion through a carbon or nitrogen atom; trifluoro C_{1-6} alkyl, or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, di C_{1-6} alkylamino or C_{3-8} cycloalkyl, and R_5 represents hydrogen or a C_{1-4} alkyl group or R_4 and R_5 may, together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, hexamethylenimino, heptamethylenimino, tetrahydropyridino, morpholino or thiamorpholino group which may be unsubstituted or may be substituted by one or more C_{1-3} alkyl groups or a hydroxy group;

Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;

R_3, which may be in either the 2- or 3- position, represents the group



where X represents —CH_2—, —O— or —S—;

n represents zero, 1 or 2;

m represents 2, 3 or 4; and

where Y represents S, O, $CHNO_2$ or NR_7 where R_7 is nitro, cyano, C_{1-6} alkylsulphonyl or arylsulphonyl wherein aryl is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms;

R_6 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{1-6} alkoxy C_{1-6} alkyl or ar C_{1-6} alkyl, wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms;

with the provisos that

where R_2 represents the group R_4R_6NAlk then R_3 is in the 2- position; and

where R_2 represents hydrogen then R_3 is in the 3-position.

10. A pharmaceutical composition for the treatment of conditions mediated through H_2-receptors comprising an effective amount of at least one compound as claimed in claim 1 together with at least one pharmaceutically acceptable carrier or diluent.

4,382,930

2'-(ORTHOCHLOROBENZOYL)-4'-CHLORO-GLYCYLANILIDES, COMPOSITIONS THEREOF, AND USE AS MEDICAMENTS

Gilbert Mouzin; Henri Cousse, and Antoine Stenger, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

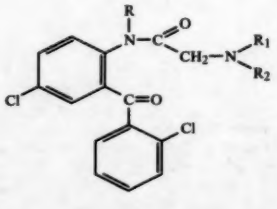
Division of Ser. No. 76,841, Sep. 19, 1979. This application Dec. 29, 1980, Ser. No. 220,514

Claims priority, application France, Sep. 25, 1978, 78 27401

Int. Cl.³ A61K *31/535;* C07D *295/14*

U.S. Cl. 424—248.54 **12 Claims**

1. A 2'-(ortho-chlorobenzoyl)-4'-chloroglycylanilide selected from compounds having the formula I:



(I)

in which:

R represents lower-alkyl;

R_1 and R_2 form, with the nitrogen atom to which they are connected, a six-membered nitrogen heterocycle which also contains an oxygen heteroatom,

and pharmaceutically-acceptable inorganic or organic acid addition salts thereof.

5. A pharmaceutical composition, suitable for use in the treatment of anxious states, comprising a compound of claim 1, having minor tranquilizing effect, in an amount effective for said purpose, in association with a pharmaceutical carrier.

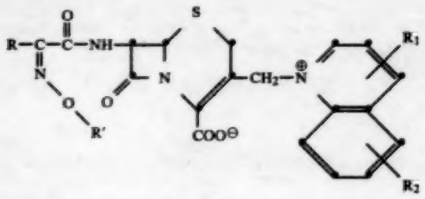
4,382,931

3'-SUBSTITUTED QUINOLINIUM CEPHALOSPORINS

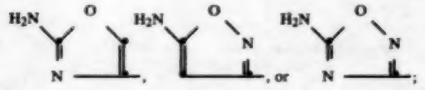
William H. W. Lunn, and William J. Wheeler, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 8, 1981, Ser. No. 300,141
Int. Cl.³ A61K 31/545; C07D 501/46
U.S. Cl. 424—246 13 Claims

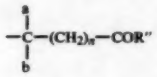
1. A compound of the formula



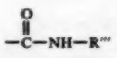
wherein R is an amino-substituted heterocyclic of the formulas



R' is hydrogen, C_1–C_4 alkyl, a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group of the formula



wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon atom to which they are attached form a C_3–C_7 carbocyclic ring; R'' is hydroxy, amino, C_1–C_4 alkoxy, and when R'' is hydroxy carboxy-protected esters thereof; or R' is an N-substituted carbamoyl group of the formula



wherein R''' is C_1–C_3 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl; R_1 and R_2 independently are hydrogen, amino, C_1–C_4 alkylamino, di-(C_1–C_4) alkylamino, hydroxy, C_1–C_4 alkoxy, halogen, C_1–C_4 alkyl, cyano, trifluoromethyl, sulfo(—SO_3H), aminosulfonyl (—SO_2NH_2), carboxy, C_1–C_4 alkoxycarbonyl, carbamoyl, thiocarbamoyl, hydroxy-substituted C_1–C_3 alkyl, formyl, or C_2–C_4 alkanoyl; and the pharmaceutically acceptable non-toxic salts thereof.

10. A pharmaceutical formulation suitable for the treatment of infectious disease which comprises a therapeutically effective amount of an antibiotic compound of claim 1 and a pharmaceutically acceptable diluent.

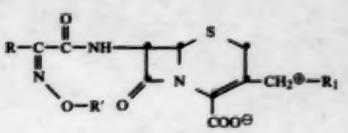
4,382,932

ISOQUINOLINIUM SUBSTITUTED CEPHALOSPORINS

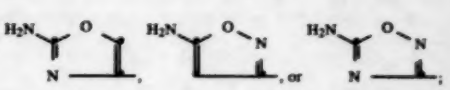
William H. W. Lunn, and William J. Wheeler, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 8, 1981, Ser. No. 300,142
Int. Cl.³ A61K 31/545; C07D 501/46
U.S. Cl. 424—246 13 Claims

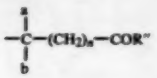
1. A compound of the formula



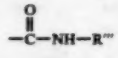
wherein R is an amino-substituted heterocyclic of the formula



R' is a hydrogen, C_1–C_4 alkyl, or a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group of the formula



wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon atom to which they are attached form a C_3–C_7 carbocyclic ring; R'' is hydroxy, C_1–C_4 alkoxy, or amino; or R' is a carbamoyl group of the formula



wherein R''' is C_1–C_3 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl; R_1 is isoquinolinium or substituted isoquinolinium substituted by amino, C_1–C_4 alkylamino, di-(C_1–C_4 alkyl-)amino, hydroxy, C_1–C_4 alkoxy, halogen, C_1–C_4 alkyl, cyano, trifluoromethyl, sulfo(—SO_3H), aminosulfonyl(—SO_2NH_2), carboxy, C_1–C_4 alkoxycarbonyl, hydroxy substituted C_1–C_3 alkyl, formyl, C_2–C_4 alkanoyl, thiocarbamoyl, or carbamoyl; and the pharmaceutically acceptable non-toxic salts thereof.

10. A pharmaceutical formulation which comprises a therapeutically effective amount of an antibiotic compound of claim 1 and a pharmaceutically acceptable diluent.

4,382,933

COMBATING FUNGI WITH 2-METHYLENE-3-SUBSTITUTED-4,5-BIS-TRIFLUOROMETHYL-IMINO-THIAZOLIDINES

Klaus Grohe, Odenthal; Hans-Joachim Scholl, Cologne; Volker Paul, Solingen; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 162,296, Jun. 23, 1980, abandoned, which is a division of Ser. No. 9,564, Feb. 5, 1979, Pat. No. 4,237,143. This application May 28, 1981, Ser. No. 267,830
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808227
Int. Cl.³ C07D 277/04; A61K 31/425
U.S. Cl. 424—248.4 6 Claims

1. A compound of the formula

in which R^1 represents aryl with up to 10 carbon atoms or aralkyl with up to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, the aryl radicals mentioned being optionally substituted by halogen, cyano, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 3 carbon atoms, or represents an amino group $—NR^4R^5$,

wherein

R^4 and R^5 together with the connecting nitrogen atom and optionally one or more further hetero-atoms selected from oxygen, sulphur and nitrogen, form a heterocyclic ring with 5 to 7 ring atoms,

R^2 represents alkoxycarbonyl with up to 4 carbon atoms in the alkyl part, and

R^3 represents hydrogen, cyano or alkoxycarbonyl with up to 4 carbon atoms in the alkyl part and which can be optionally substituted by an alkoxy or alkylmercapto group with up to 3 carbon atoms, or represents an acyl group with a total of up to 10 carbon atoms, alkylsulphonyl with up to 6 carbon atoms or arylsulphonyl with up to 10 carbon atoms in the aryl part, which aryl part is optionally substituted by alkyl with up to 3 carbon atoms and/or nitro and/or halogen, or represents an amide or thioamide group comprising the radical $CO—NR^6R^7$ or $CS—NR^6R^7$,

in which

R^6 represents hydrogen or alkyl with up to 4 carbon atoms, and

R^7 represents alkyl with up to 6 carbon atoms, cycloalkyl with 5 or 6 carbon atoms or phenyl, which phenyl can be substituted by halogen, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 4 carbon atoms, at least one or R^2 and R^3 representing alkoxycarbonyl.

4,382,934

ISATIN DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Tsutomu Teraji; Teruo Oku, both of Osaka, and Takayuki Namiki, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

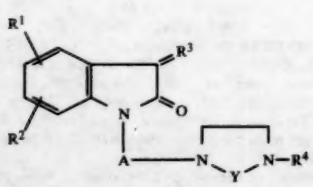
Filed Oct. 10, 1979, Ser. No. 83,271

Claims priority, application United Kingdom, Oct. 10, 1978, 39977/78

Int. Cl.³ A61K *31/495*; C07D *403/06*

U.S. Cl. 424—250 **16 Claims**

1. A compound of the formula:



wherein

R^1 and R^2 are each hydrogen, halogen, lower alkyl, lower alkoxy, halo (lower) alkyl, lower alkanoylamino, lower alkoxalylamino, or a 5 to 6 membered saturated or unsaturated heterocyclic group having at least one imino group, and selected from the group consisting of pyrrolidinyl, pyrrolinyl, imidazolidinyl, piperazinyl, piperidyl, and morpholynyl,

or R^1 and R^2 are combined together to form a benzene ring,

R^3 is oxo or a group of the formula $=N—OR^5$, in which R^5 is hydrogen or lower alkyl,

R^4 is mono- or di- or triphenyl (lower) alkyl,

A is C_1 to C_7 alkylene and its hydroxy derivatives,

Y is (C_1 to C_3) alkylene,

and a pharmaceutically acceptable salt thereof.

16. An antiallergic composition comprising, as an active ingredient, the compound of claim **1**, in association with a non-toxic, pharmaceutically acceptable in sufficient amount to provide antiallergic properties carrier.

4,382,935

ANALGESIC DRUG CONTAINING A DERIVATIVE OF BENZYLPIPERAZINE

André Buzas, 25 route de Versailles, 91570 Bievres; Jean-Marie Melon, 158 rue de Courcelles, 75017 Paris, both of France; Gilbert Lavielle, Orleans, and André Champagnac, Bresles, both of France, assignors to André Buzas, Bievres; Jean-Marie Melon, Paris; Laboratoires Sauba S.A., Montreuil and Universite d'Orleans, Orleans, all of, France

Filed Jan. 29, 1981, Ser. No. 229,532

Claims priority, application France, Feb. 14, 1980, 80 03284

Int. Cl.³ A61K *31/495*; C07D *405/04*

U.S. Cl. 424—250 **2 Claims**

1. An analgesic pharmaceutical composition containing an analgesically-effective amount of 1-(3'-benzofuryl)-4-benzylpiperazine and a pharmaceutically acceptable excipient

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4,382,936

CEREBRAL VASODILATOR EBURNANE DERIVATIVES

Junki Katsube, Toyonaka; Keiichi Ono, Osaka, and Hajime Kawakami, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

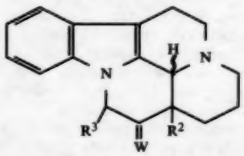
Division of Ser. No. 93,606, Nov. 13, 1979, Pat. No. 4,316,028. This application Apr. 30, 1981, Ser. No. 259,179

Claims priority, application Japan, Nov. 20, 1978, 53-143841; Jan. 24, 1979, 54-7482; Jan. 25, 1979, 54-7849; Oct. 4, 1979, 54-128498

Int. Cl.³ A61K *31/435*; C07D *461/00*

U.S. Cl. 424—256 **12 Claims**

1. A compound of the formula:



wherein R^2 is a hydrogen atom or a C_1–C_6 alkyl group, R^3 is a hydrogen atom or the formula: $—CO_2R^1$ (R^1 is a C_1–C_6 alkyl group) and W is an oxygen atom or an imino group but not an imino group in case that R^3 is a hydrogen atom.

11. A cerebral vasodilating composition which comprises a cerebral vasodilatory effective amount of a compound as claimed in any one of claims **1** to **9** and a pharmaceutically acceptable carrier or diluent.

12. A method of treating cerebral insufficiency via cerebral vasodilation by administering a cerebral vasodilatory effective amount of a compound as claimed in any one of claims **1** to **9**.

4,382,937

NAPHTHYRIDINE DERIVATIVES AND THEIR USE AS ANTI-BACTERIALS

Jun-ichi Matsumoto, Ikoma, and Shinichi Nakamura, Takatsuki, both of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly-sur-Seine, France

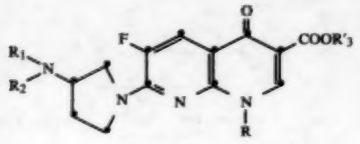
Filed Feb. 24, 1982, Ser. No. 351,924

Claims priority, application Japan, Feb. 27, 1981, 56/28978; Mar. 6, 1981, 56/32745

Int. Cl.³ A61K *31/44*; C07D *471/04*

U.S. Cl. 424—256 **4 Claims**

1. A 1,8-naphthyridine compound of the formula



wherein

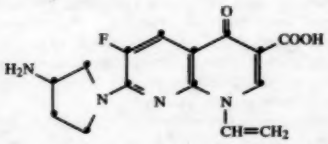
R is vinyl or 2-fluoroethyl,

R_1 and R_2 are the same or different and each represents a hydrogen atom or lower alkyl having 1 to 4 carbon atoms, and

R_3' is a hydrogen atom, lower alkyl having 1 to 6 carbon atoms, pivaloyloxymethyl, ethoxycarbonyloxyethyl, 5-indanyl or phthalidyl

or a non-toxic salt thereof.

4. A method for the treatment of a bacterial infectious disease which comprises administering to a warm-blooded animal suffering from such disease an antibacterially effective amount of a 1,8-naphthyridine compound of the formula



or a non-toxic salt thereof.

4,382,938

IMIDAZO[1,2-A] PYRIDINE DERIVATIVES AND THEIR APPLICATION AS PHARMACEUTICALS

Jean-Pierre Kaplan, Bourg la Reine, and Pascal George, Vitry sur Seine, both of France, assignors to Synthelabo, Paris, France

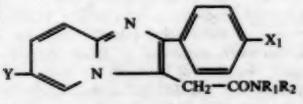
Filed Oct. 21, 1981, Ser. No. 313,601

Claims priority, application France, Oct. 22, 1980, 80 22537

Int. Cl.³ A61K *31/435*; C07D *471/04*

U.S. Cl. 424—256 **12 Claims**

1. A compound of the formula



wherein

X_1 is halogen or methyl;

Y is hydrogen, halogen or methyl;

R_1 is hydrogen, C_{1-5} alkyl or hydroxy (C_{1-5} alkyl); and

R_2 is C_{1-5} alkyl or hydroxy (C_{1-5} alkyl)

or a pharmaceutically acceptable salt thereof.

4,382,939

3-[2-(MONO-AND DIALKYLAMINO)PROPYL]-1,2,3,4-TETRAHYDRO-5H-[1]BENZOPYRANO[3,4-C]PYRIDIN-5-ONES USEFUL FOR TREATING BRONCHOSPASTIC DISEASES

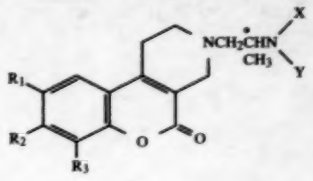
David T. Connor, Ann Arbor; Charles F. Schwender, Dexter; Roderick J. Sorenson, and Paul C. Unangst, both of Ann Arbor, all of Mich., assignors to Warner Lambert Company, Morris Plains, N.J.

Filed Feb. 23, 1982, Ser. No. 351,554

Int. Cl.³ A61K *31/455*; C07D *491/052*

U.S. Cl. 424—256 **15 Claims**

1. A compound having the structural formula I



I

wherein

R_1 is H, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms, halo, or acetylamino;

R_2 is H, alkyl of from 1 to 6 carbon atoms, or alkoxy of from 1 to 6 carbon atoms;

R_3 is H, or alkoxy of from 1 to 6 carbon atoms;

R_1 and R_2 taken together are OCH_2O;

R_2 and R_3 taken together are CH=CH—CH=CH;

X is CH_3, C_2H_5, n-C_3H_7, or n-C_4H_9;

Y is H, CH_3, C_2H_5 n-C_3H_7, n-C_4H_9, or s-C_4H_9;

and the pharmaceutically acceptable salts thereof, provided that R_1 and R_2 are not both OCH_3 when Y is H.

4,382,940

ERCOLINE DERIVATIVES AND THERAPEUTIC COMPOSITIONS HAVING CNS AFFECTING ACTIVITY

Luigi Bernardi; Germano Bosisio; Sergio Manteganì; Alessandro Rossi, and Aldemio Temperilli, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Italy

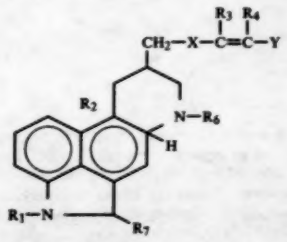
Filed Dec. 1, 1980, Ser. No. 211,920

Claims priority, application United Kingdom, Dec. 6, 1979, 7942079; Mar. 1, 1980, 8007029; May 29, 1980, 8017518

Int. Cl.³ C07D *457/02*; A61K *31/55*

U.S. Cl. 424—261 **48 Claims**

1. A compound of the formula



wherein R_1 is a hydrogen atom or methyl;

R_2 is a hydrogen atom or methoxy;

X is an oxygen atom or NH;

R_3 is a hydrogen atom, phenyl, or methyl;

R_4 is a hydrogen atom, or

R_3 and R_4 together represent a 4-membered saturated carbon atom chain;

Y is cyano or a group of the formula COR_5 wherein R_5 is methyl, phenyl, or ethoxy; or

R_5 and R_3 together represent a 2- or 3-membered saturated carbon atom chain;
R_6 is C_1-C_3 alkyl or allyl, and
R_7 is a hydrogen atom, a chlorine atom, a bromine atom, methyl, or SCH_3, and
a pharmaceutically acceptable acid addition salt thereof.

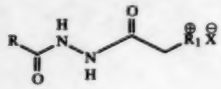
4,382,941

BISHYDRAZIDE QUATERNARY SALTS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Susana M. Sicardi, Cereti 2515, 8th Floor, Bs. As., 1431 Buenos Aires, Argentina

Filed Nov. 26, 1980, Ser. No. 210,585
Int. Cl.³ A61K *31/44*; C07D *213/02*
U.S. Cl. 424—263 **3 Claims**

1. A compound of the formula



(I)

wherein
R is (C_9–C_{19})-alkyl, (C_{13}–C_{19})-alkenyl, phenyl or phenyl substituted by OH, SCH_2Phe, $SCH_2CH{=}CH_2$, $SOCH_2$-Phe, SO_2CH_2Phe, OCH_2Phe, Cl, NO_2, or SH;
X is a halogen anion, and
R_1 is pyridinium.

3. A composition for antibacterial use containing an effective amount of a compound of the formula (I) of claim **1** together with a suitable carrier.

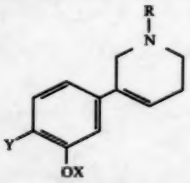
4,382,942

3-(1,2,5,6-TETRAHYDROPYRIDIN-3-YL)-PHENOLS AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Lucien Nedelec, Le Raincy; Jacques Guillaume, Le Pre Saint Gervais, and Claude Dumont, Nogent sur Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Dec. 9, 1981, Ser. No. 328,930
Claims priority, application France, Dec. 15, 1980, 80 26540
Int. Cl.³ A61K *31/44*; C07D *211/70*
U.S. Cl. 424—263 **15 Claims**

1. A compound selected from the group consisting of 3-(1,2,5,6-tetrahydropyridin-3-yl)-phenols of the formula



I

wherein X is selected from the group consisting of hydrogen and an acyl of an organic carboxylic acid of 2 to 7 carbon atoms, Y is selected from the group consisting of hydrogen and —OX, R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms optionally substituted with —OH, cycloalkylalkyl of 4 to 7 carbon atoms, alkenyl and alkynyl of 3 to 5 carbon atoms and aralkyl of 7 to 12 carbon atoms optionally substituted on the alkyl with —OH with the proviso that when R is hydrogen, X is hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

11. A method of treating Parkinson's disease and vomitting and nausea in warm-blooded animals comprising administering to warm-blooded animals an antiemetically and dopaminergic agonistically and/or antagonistically effective amount of at least one compound of claim **1**.

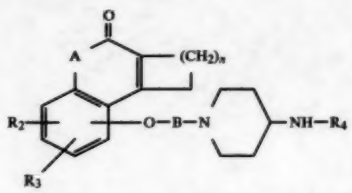
4,382,943

ANTI-ALLERGIC ARYL ETHER DERIVATIVES

Werner Winter, Heppenheim; Walter-Gunar Friebe, Darmstadt; Androniki Roesch, Mannheim, and Otto-Henning Wilhelms, Weinheim-Rittenweier, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 280,434
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025385
Int. Cl.³ A61K *31/445*; C07D *405/06*
U.S. Cl. 424—267 **10 Claims**

1. An aryl ether derivative of the formula



in which
A is an oxygen atom or an $>N—R_1$ grouping,
R_1 is a hydrogen atom or a lower alkyl radical,
B is an alkylene radical containing 2 to 4 carbon atoms,
R_2 and R_3 each independently is a hydrogen or halogen atom, hydroxyl group or lower alkyl, lower alkoxy or lower alkanoyl radical,
R_4 is a hydrogen atom; a C_{1-4}-alkanoyl radical optionally substituted by halogen, phenyl or naphthyl; a C_{1-4}-alkenoyl radical optionally substituted by phenyl or naphthyl; a benzoyl, furancarbonyl, thiophen carbonyl or pyridinecarbonyl radical optionally substituted by halogen, hydroxyl, lower alkyl, lower alkoxy, lower alkoxycarbonyl, lower alkanoyloxy, carboxyl, nitro, amino, lower alkanoylamino, nitrile, trifluoromethyl, carbamoyl, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl, lower alkanoyl, benzoyl, hydroxy lower alkyl or lower alkoxy lower alkyl; a C_3–C_7-cycloalkylcarbonyl or carbamoyl radical optionally substituted by lower alkyl, phenyl or naphthyl; a C_{1-4}-alkanesulphonic acid radical; or a phenyl- or naphthyl-sulphonic acid radical, and
n is an integer from 1 to 5,
or a pharmacologically acceptable salt thereof.

9. A method of combating an allergic response in a patient which comprises administering to such patient an anti-allergically effective amount of a compound or salt according to claim **1**.

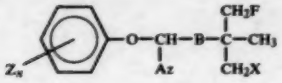
4,382,944

COMBATING FUNGI WITH 1-PHENOXY-1-TRIAZOLYL-3-FLUOROMETHYL-BUTANE DERIVATIVES

Wolfgang Krämer; Karl H. Büchel; Jörg Stetter, all of Wuppertal; Paul-Ernst Frohberger, Leverkusen; Wilhelm Brandes, Leichlingen, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 142,537, Apr. 21, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,838
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918894
Int. Cl.³ A01N *43/64*, *55/02*; C07D *249/08*; C07F *3/00*
U.S. Cl. 424—269 **12 Claims**

1. A 1-phenoxy-1-triazolyl-3-fluoromethyl-butane derivative of the formula



in which
Az is 1,2,4-triazol-1-yl or 1,2,4-triazol-4-yl,
B is —CO— or —CH(OH)—,
X is hydrogen or fluorine,
Z each independently is halogen, and
n is 1 or 2,
or an adduct thereof with a hydrogen halide acid, phosphoric acid, nitric acid, sulphuric acid, a mono-functional or bifunctional carboxylic or hydroxycarboxylic acid or a sulphonic acid, or with a metal salt in which the metal is copper, zinc, manganese, magnesium, tin, iron or nickel, and the anion of the salt is halide, sulphate, phosphate or nitrate.

11. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or adduct according to claim **1**.

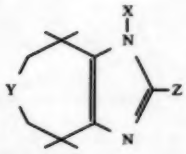
4,382,945

TETRAHYDROTHIEPINO[4,5-d]IMIDAZOLE DERIVATIVES, COMPOSITION AND METHOD OF USE

Romano Derungs, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

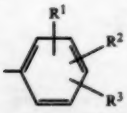
Filed Apr. 16, 1981, Ser. No. 254,826
Claims priority, application Switzerland, Apr. 29, 1980, 3304/80; Feb. 16, 1981, 1057/81
Int. Cl.³ A61K *31/415;* **C07D** *495/04*
U.S. Cl. 424—273 R **9 Claims**

1. A compound of the formula



I

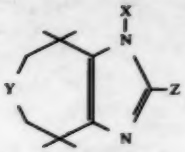
wherein X is hydrogen or C_{1-4}-alkyl, Y is sulfur, sulfinyl or sulfonyl and Z is a group of the formula



Z

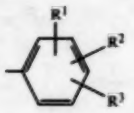
wherein R^1, R^2 and R^3 are hydrogen, methyl, fluorine, hydroxy, methoxy, methylthio or two of R^1, R^2 and R^3 on adjacent carbon atoms taken together are methylenedioxy or ethylenedioxy or one of R^1, R^2 and R^3 is mono-or di-(C_{1-4}-alkyl)-amino and the other two are hydrogen,
or physiologically compatible acid addition salt thereof.

9. A method of inhibiting blood platelet aggregation which comprises administering an effective amount of a compound of formula



I

wherein X is hydrogen or C_{1-4}-alkyl, Y is sulfur, sulfinyl or sulfonyl and Z is a group of the formula



Z

wherein R^1, R^2 and R^3 are hydrogen, methyl, fluorine, hydroxy, methoxy, methylthio or two of R^1, R^2 and R^3 on adjacent carbon atoms taken together are methylenedioxy or ethylenedioxy or one of R^1, R^2 and R^3 is mono-or di-(C_{1-4}-alkyl)-amino and the other two are hydrogen,
or physiologically compatible acid addition salt thereof.

4,382,946

METHOD OF ALLEVIATING WITHDRAWAL SYMPTOMS

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Dec. 14, 1981, Ser. No. 330,528
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **4 Claims**

1. A method of alleviating the adverse symptoms of withdrawal from a drug substance selected from the group consisting of alcohol and methadone, which comprises administering an anti-withdrawal effective amount of lofexidine or a pharmaceutical salt thereof to an individual dependent upon said drug or drug substance.

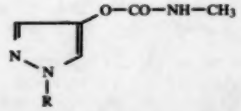
4,382,947

COMBATING PESTS WITH N-METHYL-CARBAMIC ACID O-PYRAZOL-4-YL ESTERS

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 167,556, Jul. 11, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,767
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931033
Int. Cl.³ A01N *43/36;* **C07D** *231/18*
U.S. Cl. 424—273 P **9 Claims**

1. An N-methyl-carbamic acid O-pyrazol-4-yl (1-substituted)-ester of the formula



in which R is alkyl, alkenyl, alkinyl or alkoxyalkyl with up to 4 carbon atoms, or cycloalkyl with 3 to 6 carbon atoms.

8. A method of combating insects, acarids or nematodes comprising applying to the insects, acarids or nematodes, or to

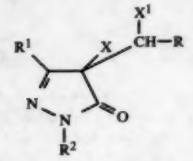
a habitat thereof, an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,382,948
1,3,4-TRISUBSTITUTED-2-PYRAZOLIN-5-ONE FUNGICIDES

Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 25, 1982, Ser. No. 361,653
Int. Cl.³ A01N *43/56*; C07D *231/20*
U.S. Cl. 424—273 P **11 Claims**

1. A compound of the formula



wherein R is phenyl or phenyl substituted with 1 to 3 substituents independently selected from fluoro, chloro, bromo, iodo, nitro, and trifluoromethyl; R^1 is lower alkyl; R^2 is lower alkyl; and X and X^1 are independently halogen.

7. A method for controlling of fungi which comprises applying to the fungus or its habitat a fungicidally effective amount of the compound of the formula defined in claim 1.

4,382,949
2-(AMINO ACID-THIO)-1-CARBAPEN-2-EM-3-CARBOXYLIC ACIDS AND CONGENERS

Adriano Afonso, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jul. 31, 1980, Ser. No. 174,290
Int. Cl.³ C07D *487/04, 205/08*; A61K *31/40*
U.S. Cl. 424—274 **3 Claims**

1. (5R,6S,8R,2'S)-2-[(2'-amino-2'-carboxyethyl)thio]-6-(1-hydroxyethyl)-1-carbapen-2-em-3-carboxylic acid, sodium salt.

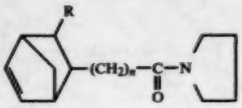
3. A method of eliciting an antibacterial response in a warm-blooded animal to a susceptible bacterial infection which comprises administering to said animal a non-toxic antibacterially effective amount of (5R,6S,8R,2'S)-2-[2'-amino-2'-carboxyethyl)thio]-6-(1-hydroxyethyl)-1-carbapen-2-em-3-carboxylic acid, sodium salt, together with a non-toxic pharmaceutically acceptable carrier.

4,382,950
INSECT REPELLANTS

Terrence P. McGovern, Bowie, Md., and Carl E. Schreck, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 40,253, May 18, 1979, Pat. No. 4,298,612, which is a division of Ser. No. 8,814, Feb. 2, 1979, Pat. No. 4,291,041. This application Mar. 19, 1981, Ser. No. 245,461
Int. Cl.³ A01N *43/36*
U.S. Cl. 424—274 **1 Claim**

1. A method of repelling insects comprising applying to the skin or to clothing an effective insect repellent amount of a compound of the formula



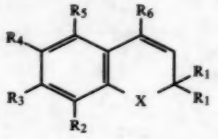
wherein R is hydrogen or lower alkyl and n is zero or the positive integer one, two, or three.

4,382,951
BENZOPYRANE AND BENZOTHIOPYRANE DERIVATIVES USEFUL AS ANTI-MYCOTIC AGENTS

Maximilian Grassberger, Vienna, and Gabor Petranyi, Schwechat, both of Austria, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 10, 1981, Ser. No. 329,171
Claims priority, application Switzerland, Dec. 15, 1980, 9232/80
Int. Cl.³ A61K *31/35, 31/38*; C07D *311/04, 335/06*
U.S. Cl. 424—275 **19 Claims**

1. A compound of formula I:



I

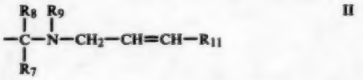
wherein

X represents oxygen or sulphur,

each R_1 represents independently hydrogen or methyl,

R_3 and R_4 represent independently hydrogen, halogen, lower alkyl or lower alkoxy,

R_2 and R_5 represent independently hydrogen, halogen, lower alkyl, lower alkoxy or a group of formula II:



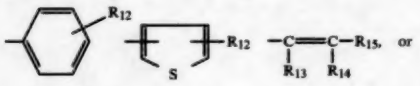
II

wherein

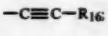
R_7 and R_8 represent independently hydrogen or lower alkyl,

R_9 represents lower alkyl and

R_{11} represents a group of formula IIa, IIb, IIc or IId,



IIa IIb IIc



IId

wherein

R_{12} represents hydrogen, halogen, trifluoromethyl, lower alkyl or lower alkoxy,

at least one of R_{13}, R_{14} and R_{15} represents alkyl and the others represent hydrogen or alkyl, or R_{14} together with either R_{13} or R_{15} forms a C_{3-6} methylene bridge and

R_{16} represents lower alkyl, lower alkenyl or α-hydroxy lower alkyl; and

R_6 represents hydrogen, lower alkyl or a group of formula II, whereby one and only one group of formula II is always present as R_2, R_5 or R_6;

or an acid addition salt thereof.

14. A method of treating diseases or infections caused by mycetes which comprises administering to a subject in need of such treatment an effective amount of a compound of formula I as claimed in claim **1** or a chemotherapeutically acceptable acid addition salt thereof.

4,382,952

ANTIBIOTIC RORIDIN L-2 AND ITS USE

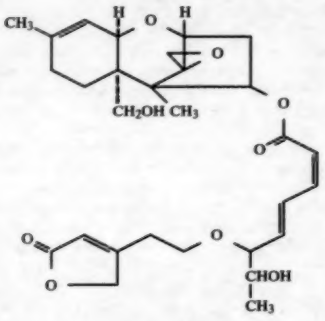
Russell J. Bloem, Dearborn; Richard H. Bunge, Mt. Clemens, and James C. French, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 19, 1981, Ser. No. 265,135

Int. Cl.³ A61K *31/34*; **C07D** *407/14*

U.S. Cl. 424—279 **3 Claims**

1. Antibiotic roridin L-2 having the structural formula



and characterized by:

(a) an infrared spectrum in potassium bromide having principal absorptions at 3450, 2970, 1782, 1750, 1640, 1600, 1435, 1284, 1180, 1084, 1030 and 965 reciprocal centimeters

(b) $[\alpha]_D 23 = +83.6°$ (1.0% in chloroform)

(c) a proton magnetic resonance spectrum in $CDCl_3$ having principal signals at (s=singlet, d=doublet, t=triplet, m=multiple) 0.83s, 1.15d (J=6), 1.72s, 2.02m, 2.81d (J=4), 3.13d (J=4), 3.5–4.0 (complex signals; area=3), 4.80d (J=2), 5.49 broad d (J=6), 5.22–6.02 (complex signals; area=3), 6.08dd (J=4,6) 6.06t (J=11); and 7.60dd (J=11,15) parts per million downfield from tetramethylsilane

(d) a carbon 13 nuclear magnetic resonance spectrum in $CDCl_3$ having principal signals in parts per million, at:

Ppm (downfield from TMS)		Ppm (downfield from TMS)
173.95		73.46
167.43		69.74
166.46		66.83
143.37		66.34
140.57		65.59
138.89		62.51
130.53		48.86
118.88		48.00
118.72		44.28
116.67		36.19
85.38		29.23
78.91		28.04
78.42		23.19
77.02	$CDCl_3$	21.14
75.62		18.44

-continued

Ppm (downfield from TMS)	Ppm (downfield from TMS)
75.40	6.57

4,382,953

OPHTHALMIC SOLUTION FOR INTRAOCULAR PRESSURE REDUCTION

Yukihisa Ishii; Yasuo Sakai; Takao Goto, all of Kusatsu, and Kiyoshi Masuda, Otsu, all of Japan, assignors to Kakenyaku Kako Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,756

Claims priority, application Japan, Sep. 6, 1979, 54-114820; Jul. 5, 1980, 55-92067; Jul. 22, 1980, 55-100947

Int. Cl.³ A61K *31/34*

U.S. Cl. 424—285 **11 Claims**

1. An ophthalmic solution for the decreasing of intraocular pressure comprising (A) 0.025 to 4.0 w/v % of an ophthalmologically acceptable, water-soluble salt of 2-acetyl-7-(2-hydroxy-3-isopropylaminopropoxy)bendzofuran, (B) 0.001 to 0.1 w/v % of benzalkonium chloride or benzethonium chloride, and (C) 0.01 to 2.0 w/v % of at least one member selected from the group consisting of polyvinyl alcohol, methyl cellulose, carboxymethyl cellulose, hydroxyethyl cellulose and hydroxypropylmethyl cellulose, the solution being adjusted to pH 5.0 to 8.0 with a buffer agent.

4,382,954

FUNGICIDAL N-1-SUBSTITUTED CYCLOPROPYL-N-ACYL-2,6-DIALKYLANILINE

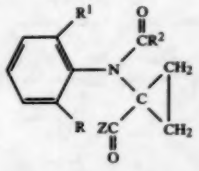
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 27, 1982, Ser. No. 343,087

Int. Cl.³ A01N *43/08*, *53/00*; **C07C** *103/46*, *103/49*, *103/66*

U.S. Cl. 424—285 **9 Claims**

1. A compound of the formula



wherein R and R^1 are independently hydrogen or lower alkyl; R^2 is lower alkenyl, lower alkynyl, or $—CH_2X$ wherein X is halogen, hydroxyl, lower alkoxy, lower alkylthio or a furyl group; Z is hydroxyl, lower alkoxy or $—NR_3R_4$ wherein R^3 and R^4 are independently hydrogen or lower alkyl.

9. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of the compound defined in claim **1**.

4,382,955

DERIVATIVE OF 4-(N-(3,4-DIHYDROXYBENZYLIDENE) AMINOMETHYL CYCLOHEXANE-1-CARBOXYLIC ACID

Hitoshi Takita; Yutaka Mukaida; Sakuo Noda, and Hidetoshi Kobayashi, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1981, Ser. No. 267,250

Claims priority, application Japan, Jun. 4, 1980, 55-75055; Feb. 24, 1981, 56-25990

Int. Cl.³ C07C *61/08;* A61K *31/215*

U.S. Cl. 424—309 **6 Claims**

1. A compound of 4-[N-(3',4'-dihydroxybenzylidene)aminomethyl]cyclohexane-1-carboxylic acid or a salt or an ester thereof.

6. A pharmaceutical composition in dosage unit form, having an inhibitory function on platelet aggregation and polynuclear leukocyte migration, comprising an effective amount of 4-N-(3',4'-dihydroxybenzylidene)aminomethyl cyclohexane-1-carboxylic acid or esters thereof or a pharmaceutical acceptable salt thereof, and a pharmaceutical carrier or a diluent therefor.

4,382,956

COMBATING FUNGI WITH N-SULPHENYLATED BIURETS

Engelbert Kühle, Bergisch-Gladbach; Volker Paul, Solingen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

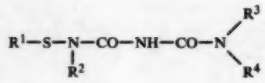
Filed Dec. 15, 1981, Ser. No. 331,098

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049439

Int. Cl.³ C07C *127/24;* A61K *31/17*

U.S. Cl. 424—322 **12 Claims**

1. An N-sulphenylated biuret of the formula



in which

R^1 represents a trihalogenomethyl radical,

R^2 represents an optionally substituted aliphatic, cycloaliphatic, araliphatic or aromatic radical and

R^3 and R^4 are identical or different and represent a hydrogen atom, an optionally substituted aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical or the amino or hydroxyl group, or together with the connecting nitrogen atom represent a five-membered or six-membered heterocyclic ring, the ring carbon atoms of which are optionally interrupted by one or more further heteroatoms.

11. A method of combating fungi comprising applying to the fungi or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,382,957

SYMMETRICAL INSECTICIDAL BIS-CARBAMATE COMPOUNDS

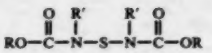
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 1, 1975, Ser. No. 636,373

Int. Cl.³ A01N *33/24, 33/26*

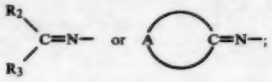
U.S. Cl. 424—327 **40 Claims**

1. A compound of the formula:



wherein:

R is:



wherein:

R_2 is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy or R_4R_5—N-CO— groups; or R_2 is phenyl, R_4R_5NCO— or $R_6CON(R_4)$—;

wherein:

R_4 and R_5 are individually hydrogen or alkyl;

R_6 is hydrogen, alkyl or alkoxy;

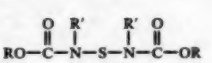
R_3 is hydrogen, alkyl, alkylthio or cyano;

A is a four or five member divalent aliphatic chain which includes one or two divalent oxygen, sulfur, sulfinyl or sulfonyl groups and which may include not more than one divalent amino, alkylamino or carbonyl groups, in any combination;

provided that the total number of carbon atoms in R may not exceed eight and provided further that when R_2 is alkyl substituted with alkylthio, R_3 is alkyl or alkylthio; and

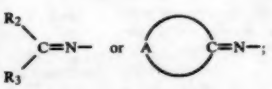
R' is alkyl containing from one to four carbon atoms.

12. A pesticidal composition comprising an insecticidally or miticidally effective amount of at least one compound of the formula:



wherein:

R is:



wherein:

R_2 is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy or R_4R_5—N-CO—groups; or R_2 is phenyl, R_4R_5NCO— or $R_6CON(R_4)$—;

wherein:

R_4 and R_5 are individually hydrogen or alkyl;

R_6 is hydrogen, alkyl or alkoxy;

R_3 is hydrogen, alkyl, alkylthio or cyano;

A is a four or five member divalent aliphatic chain which includes one or two divalent oxygen, sulfur, sulfinyl or sulfonyl groups and which may include not more than one divalent amino, alkylamino or carbonyl groups, in any combination;

provided that the total number of carbon atoms in R may not exceed eight and provided further that when R_2 is alkyl substituted with alkylthio, R_3 is alkyl or alkylthio; and

R' is alkyl containing from one to four carbon atoms; and an acceptable carrier.

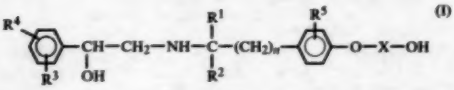
4,382,958

SECONDARY AMINES AND COMPOSITIONS FOR TREATMENT OF HYPOGLYCAEMIA OR OBESITY

David M. Duckworth, Tadworth, England, assignor to Beecham Group Limited, England

Filed Nov. 9, 1981, Ser. No. 319,604
Claims priority, application United Kingdom, Nov. 20, 1980, 8037299
Int. Cl.³ A61K 31/135; C07C 87/28
U.S. Cl. 424—330 8 Claims

1. A compound of formula (I):



(I)

or a salt thereof; wherein R^1 is hydrogen, methyl or ethyl R^2 is hydrogen, methyl or ethyl; R^3 is hydrogen, fluorine, chlorine, bromine or trifluoromethyl; each of R^4 and R^5 is hydrogen, fluorine, chlorine, bromine, C_{1-6} alkyl or C_{1-6} alkoxy; n is 1 or 2; and X is C_{1-12} straight or branched alkylene.

4,382,959

NAPHTHALENE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN ANTI-INFLAMMATORY PHARMACEUTICAL COMPOSITIONS

Alexander C. Goudie, Harlow, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 94,101, Nov. 14, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,197
Claims priority, application United Kingdom, Nov. 23, 1978, 45815/78; Apr. 25, 1979, 7914430
Int. Cl.³ A61K 31/12; C07C 49/252
U.S. Cl. 424—331 6 Claims

1. A member selected from the group consisting of 4-(6-methoxy-2-naphthyl)-3-hydroxybutan-2-one and 4-(6-methoxy-2-naphthyl)buta-2,3-diol.

2. A pharmaceutical composition for effecting an analgesic and anti-inflammatory response which comprises an effective amount of a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,382,960

COSMETIC CLEANSER FORMULATION

Merlyn G. Flom, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,657
Int. Cl.³ A61K 47/00
U.S. Cl. 424—358 1 Claim

1. A cosmetic cleanser formulation consisting essentially of, in percent by weight:

Ingredients	Percent
propylene glycol	6.00
magnesium aluminum silicate	1.00
sodium carboxymethyl cellulose	0.10
glyoxyldiureide	0.50
polyoxyethylene (10) soya or tall oil sterols	2.50
polyoxyethylene (3) myristyl ether myristate	15.00
squalane (2,6,10,15,19,23-hexamethyl-tetracosane)	12.00
polydimethylcyclosiloxane	12.00
stearyl alcohol (1-octadecanol)	1.50
cetyl alcohol (1-hexadecanol)	3.00
glycerol monostearate and polyoxyethylene (100) monostearate	2.00
preservative	q.s.
deionized water	q.s. to 100%

4,382,961

COSMETIC PREPARATION AND PROCESS FOR PREPARING SAME

Margit Nedeczky née Gardy, 74, Szabadkai ut 74, Szigethalom, 2315, and György Király, 36, Soroksári ut, Budapest, 1095, both of Hungary

Filed Jul. 9, 1981, Ser. No. 281,765
Claims priority, application Hungary, Jul. 31, 1980, 1913/80
Int. Cl.³ A61K 47/00, 35/78
U.S. Cl. 424—364 3 Claims

1. A process for the preparation of a cosmetic for increasing the elasticity and tightness of the skin, characterized in that stalks of sunflower or portions of the stalk are extracted with a 1 to 20-fold amount of water and/or ethanol, the extract is filtered from the solids and the resulting solution is optionally homogenized with carriers, diluents and/or their additives usable in the preparation of cosmetics.

4,382,962

SUGARLESS-TYPE CHEWING GUM

Francis Devos, Merville; Guy Bussiere, La Gorgue, and Michel Huchette, Merville, all of France, assignors to Societe Roquette Freres, Lestrem, France

Filed Jun. 6, 1980, Ser. No. 157,159
Claims priority, application France, Jun. 15, 1979, 79 15479
Int. Cl.³ A23G 3/30
U.S. Cl. 426—3 2 Claims

1. In a process for manufacturing a stable, non-cariogenic and sugarless chewing-gum comprising:

the melting of a base gum,

the mixing of this base gum with an aqueous softening agent selected within the group consisting of liquid sorbitol and aqueous solutions of vegetable gums,

the addition to this mixture of solid sweetening agents comprising mannitol and at least one of the group consisting of sorbitol and xylitol,

the rolling of the dough so obtained followed by putting it into the desired shape,

the improvement wherein at least part of the aqueous softening agent is substituted with an amount increasing from 5 to 35% by weight of a hydrogenated starch hydrolysate comprising:

less than 3% of polyols of DP higher than 20,

less than 60% of maltitol (DP 2) and

less than 19% of sorbitol (DP 1),

the balance to 100 being constituted by a mixture of polyols of DP 3 to 20,

and wherein, simultaneously to the said selection of an increasing proportion of hydrogenated starch hydrolysate, there is selected a decreasing proportion of mannitol, said proportion of mannitol being less than 10% by weight when the proportion of hydrolysate is higher than 10% by weight, less than 5% by weight and about 0 and even null when the proportion of hydrolysate is higher than 20% by weight.

4,382,963

LOW-CALORIE, SUGAR-FREE CHEWING GUM CONTAINING POLYDEXTROSE

Robert E. Klose, West Nyack, and Ragnar E. Sjonvall, Eastchester, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,360
Int. Cl.³ A23G 3/30
U.S. Cl. 426—3 6 Claims

1. A sugar-free, unsweetened, chewing gum with a caloric density of less than one calorie per gram comprising from 65% to 85% by weight of spray-dried polydextrose having a moisture content of less than 5%, from 15% to 35% by weight of a gum base and a moisture content from 1% to 5% by weight.

4,382,964

PROCESS FOR PRODUCING SOY SAUCE OR MISO

Fumio Noda, Kamagaya; Akio Hagiwara, Showamachi; Kazuya Hayashi, Kashiwa; Takashi Iwaasa, Noda; Takeji Mizunuma, Noda, and Toshio Sakasai, Noda, all of Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Oct. 15, 1980, Ser. No. 197,671
Claims priority, application Japan, Oct. 20, 1979, 54-134739
Int. Cl.³ A23L 1/20, 1/238
U.S. Cl. 426—7 7 Claims

1. In a process for producing a soy sauce or miso wherein a raw material selected from the group consisting of a denatured protein material and a gelatinized starch material is subjected to a treatment selected from the group consisting of enzyme hydrolysis treatment, acid hydrolysis treatment, and koji treatment, followed by fermentation with halotolerant lactic acid bacteria and halotolerant yeasts, the improvement comprising conducting said fermentation in the co-presence of potassium chloride and sodium chloride, the total combined concentrations of potassium chloride and sodium chloride is 7 to 20 percent (w/v), and the amount of potassium chloride is 5 to 50 percent of the total combined weight of potassium chloride and sodium chloride.

4,382,965

METHOD AND STARTER COMPOSITIONS FOR THE GROWTH OF ACID PRODUCING BACTERIA AND BACTERIAL COMPOSITION PRODUCED THEREBY

William E. Sandine, and James W. Ayres, both of Corvallis, Oreg., assignors to State of Oregon, acting by and for the State Board of Higher Education on behalf of Oregon State University, Corvallis, Oreg.

Continuation of Ser. No. 52,960, Jun. 28, 1979, Pat. No. 4,282,255. This application Jul. 1, 1981, Ser. No. 279,340
Int. Cl.³ A23C 9/12, 9/127; C12N 1/20
U.S. Cl. 426—7 18 Claims

1. In a method for growing acid producing bacteria to be used in fermenting foods by inoculating the bacteria into a growth medium containing water and nutrients for the bacteria, growing the bacteria in the growth medium, and using the bacteria so grown for fermenting the food the improvement which comprises:

(a) providing a temporarily water insolubilized and thus initially solid form of a nontoxic, ordinarily water soluble neutralizing agent which is a base, basic salt or mixture thereof in intimate contact with the growth medium, the neutralizing agent being insolubilized in such a form that the neutralizing agent is gradually released from the solid form into the medium over a period of time, and wherein the growth medium and neutralizing agent, in combination, are adapted for growing acid producing bacteria to be used in fermenting the food;

(b) growing the bacteria in the growth medium in the presence of the insolubilized neutralizing agent, wherein a pH range in the medium is maintained above about 5 for so long as desired to promote growth of the bacteria by a controlled reaction of the released neutralizing agent with at least a part of the acid produced by the bacteria in the medium over the period of time; and

(c) fermenting the food with the bacteria after they have been grown in the growth medium including the neutralizing agent.

4,382,966

ANIMAL FEED SUSPENSION AND METHOD OF MAKING THE SAME

James C. Mickus, Bloomington; Robert L. Hesse, Minneapolis, both of Minn., and Gary L. Pruitt, Mount Zion, Ill., assignors to Cargill Incorporated, Minneapolis, Minn.

Filed Nov. 12, 1980, Ser. No. 205,920
Int. Cl.³ A23K 1/22, 1/18
U.S. Cl. 426—69 15 Claims

1. A method for the manufacture of a stable liquid animal feed suspension with high loading of macro minerals therein said method comprising:

dispersing and hydrating xantham gum in an aqueous medium selected from the group consisting of water, corn steep liquor, urea, whey, or mixtures thereof forming a xanthan gum mixture;

mixing into said xanthan gum mixture water soluble salts, nutritive ingredients and calcium carbonate forming a uniformly dispersed calcium carbonate suspension, said calcium carbonate having a size of about 200 mesh or smaller, said calcium carbonate comprising at least about 20 percent by weight of said suspension; and

adjusting the pH of said suspension to between about 5.8 and about 9.0.

4,382,967

METHOD FOR PREPARING POROUS SACCHARIDE GRANULES AND FOODS THEREFROM

Daikichi Koshida, Toyonaka; Ko Sugisawa, Nara; Yasushi Matsumura, Nara; Takashi Kimura, Nara, and Kazumitsu Taga, Neyagawa, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Jan. 27, 1978, Ser. No. 229,017
Claims priority, application Japan, Jan. 28, 1980, 55-7728; Jun. 25, 1980, 55-85187; Sep. 4, 1980, 55-121781; Sep. 4, 1980, 55-121782
Int. Cl.³ A23G 3/00; A23L 1/40
U.S. Cl. 426—96 11 Claims

1. A method for preparing porous saccharide granules, comprising:

(a) moistening saccharide granules to a moisture content of 1 to 20 wt. % water thereby forming moistened saccharide granules which maintain the form of granules; and

(b) heating said moistened saccharide granules to a temperature between 100° C. and 140° C. sufficient to crystallize said granules.

4,382,968

PROCESS FOR MOLDING CHOCOLATE TO MAKE CHOCOLATE BLOCK HAVING ORNAMENTAL PATTERN

Tokuji Akutagawa, Tokyo, Japan, assignor to Akutagawa Confectionery Co., Ltd., Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,250
Int. Cl.³ A23G 1/00, 1/21
U.S. Cl. 426—249 10 Claims

1. A process for molding chocolate to make a molded product including a thin ornamental relief pattern made of a first chocolate material of one color and a body portion carrying said thin ornamental pattern and made of a second chocolate material of different color, said first and second chocolate materials containing 30 to 40%, by weight, of base oils and fats, and at least 60%, by weight, of said base oils and fats contained in one chocolate material being the same as those contained in the other chocolate material, said process comprising the steps of:

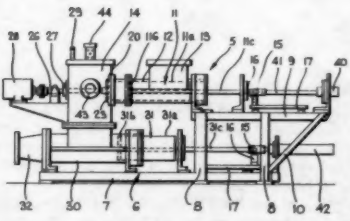
(a) fluidizing said first chocolate material by heating;
(b) casting said fluidized first chocolate material into an engraved pattern formed on the bottom face of a mold;
(c) scraping said bottom face of said mold to press said first chocolate material into said engraved pattern and to scrape off the excess material;
(d) rapidly cooling the surface of said first chocolate material to a temperature of from 18° C. to 22° C. thereby to crystallize the base oils and fats contained in said first chocolate material to form micro-crystallites;
(e) fluidizing said second chocolate material by heating;
(f) casting said fluidized second chocolate material in said mold to cover the pattern formed by said first chocolate material and to form said body portion while said micro-crystallites are growing in said first chocolate material so that said fluidized second chocolate material is allowed to penetrate into the interstices of the growing micro-crystallites of the base oils and fats contained in said first chocolate material;
(g) cooling the whole body to be solidified by crystallization of the base oils and fats contained in said second chocolate material in all the regions including the interface region at which said second chocolate material penetrates into and adjoins to said first chocolate material; and
(h) removing the solidified product from said mold.

4,382,969

METHOD FOR TREATING CHEESE

Frederick J. Sadler, Auckland, New Zealand, assignor to Schreiber Foods, Inc., Green Bay, Wis. and Butland Industries, Ltd., Auckland, New Zealand

Filed Apr. 9, 1981, Ser. No. 252,458
Claims priority, application New Zealand, Apr. 18, 1980, 193481
Int. Cl.³ A23C *19/00;* **B30B** *11/26;* **A01J** *25/13, 25/15*
U.S. Cl. 426—272 **8 Claims**



1. A method for treating cheese, said method comprising the steps of:
feeding said cheese into a first chamber;
linearly compressing said cheese under force with a first ram in said first chamber against an apertured plate so as to force said cheese through apertures in said plate;
in a second chamber, passing cutting means over the exit surface of said apertured plate so as to comminute said cheese at it emerges from said apertures into said second chamber into thin chips greater in diameter than in length, and accumulating said comminuted chips of cheese into a third chamber while maintaining a vacuum in said second and third chambers, and;
with a second ram, linearly advancing said chips of cheese accumulated in said third chamber under compressive force into and through a converging nozzle such that adjacent comminuted chips of cheese are bonded and agglomerated to form a substantially homogeneous cheese mass emerging from said nozzle.

4,382,970

FOOD PROCESSING

Torben Sorensen, Auckland, New Zealand, assignor to Getfresh Food Limited, Auckland, New Zealand

Filed Apr. 21, 1980, Ser. No. 142,159
Claims priority, application New Zealand, Feb. 26, 1980, 192976
Int. Cl.³ A21D *13/00*
U.S. Cl. 426—275 **21 Claims**

1. A method of manufacturing foodstuffs including the steps of:
(1) Sandwiching one or more pieces of a stabilized filling substance between layers of edible, flexible, doughy sheet material;
(2) Evacuating about 50% to 98% of the atmospheric gas from about said filling substance and said layers of sheet material;
(3) Reintroducing rapidly a gas about said filling substance and said layers of sheet material so that said gas quickly compresses the layers of sheet material towards each other and about said filling substance, thereby forming a sealed, encapsulated foodstuff.

4,382,971

USE OF HYPOPHOSPHOROUS ACID AND ITS SALTS TO PREVENT CLOSTRIDIAL BLOWING AND FORMATION OF CLOSTRIDIAL ENTEROTOXINS IN CHEESE

John S. Thompson, Wayne, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 18, 1981, Ser. No. 264,903
Int. Cl.³ A23L *3/34;* **A23C** *19/10, 3/08*
U.S. Cl. 426—323 **42 Claims**

1. A cheese which is essentially free of a nitrate salt and contains an effective amount of a compound sufficient to inhibit the production of enterotoxins from Clostridia spores wherein said compound is selected from the group consisting of hypophosphorous acid and its non-toxic, water-soluble salts.

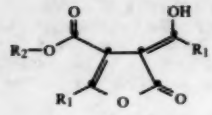
4,382,972

FLAVORING COMPOSITIONS AND FLAVORED COMESTIBLES CONTAINING ALKYL 2,3-DIHYDRO-3(1'-HYDROXYALKYLIDENE)-2-OXO-5-ALKYLFURAN-4-CARBOXYLATES

Brian J. Willis, Ramsey, N.J.; Frank Fischetti, Jr., Flushing, and Robert G. Ellerman, Merrick, both of N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Continuation-in-part of Ser. No. 72,281, Sep. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 908,267, May 27, 1978, abandoned, which is a division of Ser. No. 698,742, Aug. 4, 1975, Pat. No. 4,109,662, which is a continuation-in-part of Ser. No. 601,482, Aug. 4, 1975, abandoned. This application May 18, 1981, Ser. No. 264,806
Int. Cl.³ A23L *1/226, 1/235*
U.S. Cl. 426—536 **13 Claims**

1. A flavoring composition having enhanced flavor character comprising an alkyl 2,3-dihydro-3(1'-hydroxyalkylidene)-2-oxo-5-alkylfuran-4-carboxylate having the structure:



wherein each of R_1 and R_2 is methyl or ethyl and is the same or different and conventional flavoring ingredients, said carboxylate being present in an amount 0.01% to 30% by weight which is effective in enhancing the flavor of said flavoring ingredients, said flavoring ingredients comprising pineapple, butterscotch, banana and strawberry flavoring compositions.

4,382,973

PROCESS FOR THE PRODUCTION OF A FROZEN CHOPPED EGG PRODUCT

Mario P. de Figueiredo, Chesterfield; Lawrence R. York, Manchester, and James L. Long, Creve Coeur, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 184,585, Sep. 9, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,709

Int. Cl.³ A23L *1/32*

U.S. Cl. 426—614 **16 Claims**

1. A method of forming a chopped egg product comprising:

a. separately heating egg yolks and egg whites for a period of time effective to coagulate the yolks and whites,

b. freezing said coagulated yolks and whites,

c. chopping the frozen whites and yolks at a temperature of between about 20°–30° F. to provide a chopped egg mixture without smearing of the yolks.

4,382,974

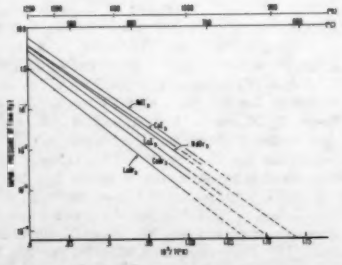
SYNTHETIC MONAZITE COATED NUCLEAR WASTE CONTAINING GLASS

Lympexios N. Yannopoulos, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 19, 1981, Ser. No. 245,488

Int. Cl.³ A61N *5/12*

U.S. Cl. 427—5 **12 Claims**



1. A method of stabilizing glass containing nuclear waste comprising applying to said glass by either chemical vapor deposition or using a detonation gun a coating consisting essentially of synthetic monazite.

4,382,975

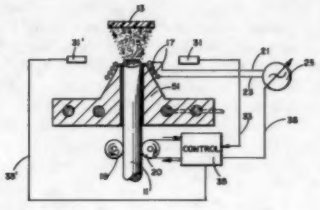
METHOD FOR COATING THIN FILM ALLOY ON A SUBSTRATE UTILIZING INDUCTIVE HEATING

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 220,398, Dec. 29, 1980. This application Jul. 15, 1981, Ser. No. 283,581

Int. Cl.³ C23C *13/02*

U.S. Cl. 427—8 **4 Claims**



1. The method of thin film alloy deposition on a substrate, comprising the steps of:

selecting a wire of the alloy to be deposited;

advancing an end of said wire through an induction heater in the vicinity of the substrate to evaporate the wire alloy for deposition onto the substrate;

detecting and monitoring said end of said wire to produce a signal indicative of the amount of wire being evaporated for deposition;

using said signal to control said advancing to determine the amount of deposition; and

concentrating the induced heat in said end by inducing greater heat at the tip end than in the wire adjacent thereto.

4,382,976

METHOD OF FORMING CORROSION RESISTANT COATINGS ON METAL ARTICLES

James E. Restall, Camberley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 172,972, Jul. 28, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,258

Claims priority, application United Kingdom, Jul. 30, 1979, 7926456

Int. Cl.³ B05D *1/00, 1/08*

U.S. Cl. 427—34 **6 Claims**

1. A method of forming a corrosion resistant coating on an article composed of a nickel-base alloy, the method comprising the steps of:

(a) coating the article with an overlay comprising M Cr Al Y where M includes Co, Fe, Ni or NiCo by a physical vapor deposition method;

(b) enclosing the article coated according to step (a) in a chamber together with a particulate pack including coating material and a halide activator; and

(c) cyclically varying the pressure of an inert gas, a reducing gas, or a mixture of said gases within the chamber while maintaining the contents of the chamber at a temperature sufficient to transfer coating material on to the surface of the overlay to form a diffusion coating therewith.

5. A method according to claim 1 in which the overlay is deposited by plasma-arc or flame spraying.

4,382,977

METHOD OF PRODUCING SMOOTH METALLIC LAYERS ON A SUBSTRATE

Joseph Murphy, Pittsburgh, and William A. Hester, Monroeville, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,790
Int. Cl.³ B05D 3/06, 5/12
U.S. Cl. 427—42 10 Claims

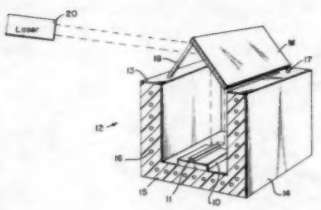
10. Method of producing a smooth layer of aluminum of about 600 to 1200 angstroms in thickness on a glass substrate consisting of electron beam depositing a layer of copper of about 300 to 600 angstroms in thickness before depositing the aluminum so that the aluminum will be able to flow into the copper and will not develop spikes when the metallized substrate is subjected to a post deposition anneal.

4,382,978

METHOD OF LASER ENHANCED THERMAL DIFFUSION

Bor-Uei Chen, Northridge, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 938,562, Aug. 31, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 212,180
Int. Cl.³ B05D 3/06; C02B 5/172
U.S. Cl. 427—53.1 12 Claims



1. A process for forming a channel optical waveguide having a three demensional structure therein comprising the steps of:

thermally diffusing an optical waveguide into a substrate to form a channel waveguide which is substantially uniform in cross-section throughout a substantial portion of its length; and

raising a selected portion of the channel waveguide to a temperature where further diffusion will take place so that a diffused structure of larger cross section than the substantially uniform channel waveguide is formed at the selected location.

4,382,979

METHOD OF MANUFACTURING A FLUORESCENT DISPLAY APPARATUS

Kazunori Tanaka; Hitoshi Toki; Hisashi Miyazawa, and Goro Eto, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

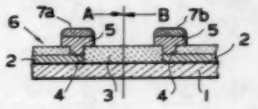
Continuation of Ser. No. 11,996, Feb. 14, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,398
Claims priority, application Japan, Feb. 14, 1978, 53-15000
Int. Cl.³ H05B 33/10; B05D 3/02
U.S. Cl. 427—68 4 Claims

1. A method of manufacturing a fluorescent display apparatus divided into a plurality of sections each having a plurality of anode conductors disposed on a base plate made of glass or ceramics, wherein phosphor layers are applied on the anode conductors in each of the sections using phosphors of different luminous colors to obtain a plurality of display sections for illuminating different luminous colors upon impingement of electrons, comprising the steps of:

forming a first phosphor paste comprising a phosphor compound capable of emitting a particular luminous color, a volatile solvent and a solid film forming element decomposable by the application of heat at a temperature under 450° C., but higher than the volatilization temperatures of the solvent;

forming a second phosphor paste consisting of a phosphor compound capable of emitting a particular luminous color different from that of the first phosphor paste, a volatile solvent, and without a film forming element;

nextly screen printing said first paste to the anode conductors of one of the sections of said display apparatus;



volatilizing the solvent of the screen printed paste after the screen printing thereof at a temperature above the volitalization temperature of the solvent and below the decomposition temperature of the solid film forming element into a solid film;

nextly depositing said second paste on the anode conductors of the remaining section of said display apparatus; and

baking the base plate with the phosphor films formed thereon at a temperature of about 500° C. to eliminate the film forming element from the first phosphor paste, leaving only the respective phosphor compound on the anode conductors on each respective display section.

4,382,980

MAGNESIUM COMPOSITIONS AND PROCESS FOR FORMING MGO FILM

Paul C. Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 18,404, Mar. 7, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 242,041
Int. Cl.³ B05D 5/12
U.S. Cl. 427—77 4 Claims

1. A screen-printable composition comprising (a) 1 to 15% by weight of an anhydrous organic magnesium compound pyrolyzable below 450° C. selected from the group consisting of magnesium alcoholates and magnesium diketones and (b) 5 to 20% by weight of a noncarboxylated cellulosic polymer pyrolyzable below 450° C., both completely dissolved in (c) 65 to 90% by weight of a nonaqueous alcohol solvent, the solution having a Brookfield viscosity of 3–200 Pa.S.

3. A method for forming a film of MgO on a ceramic surface comprising (a) applying thereto a thin layer of the composition of claim 1, (b) drying the layer, and (c) firing the dried layer at a temperature below 450° C. to volatilize the solvent and pyrolyze the organic magnesium compound.

4. The method of claim 3 in which the ceramic surface is the surface of an a-c plasma display panel.

4,382,981

METHOD FOR SHIELDING ELECTRONIC EQUIPMENT BY COATING WITH COPPER CONTAINING COMPOSITION

Steven R. Stoetzer, St. Clair Shores, and Robert E. Wiley, Port Huron, both of Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Division of Ser. No. 60,771, Jul. 26, 1979, Pat. No. 4,305,847. This application Oct. 5, 1981, Ser. No. 308,652
Int. Cl.³ B05D 1/02, 5/12; C23C 17/00
U.S. Cl. 427—105 9 Claims

1. A method for shielding an electronic device having an enclosure associated therewith, said method being comprised of protecting said device from electromagnetic interference

(EMI) by applying to said enclosure a coating composition comprised of,

a pigment material substantially of copper said pigment being finely particulated and having a particle size of less than about 200 microns,

a binder resin, the pigment to binder weight ratio in said composition being between about 20 to 1 and about 2 to 1,

an organic titanate material of the pyrophosphate type for providing good heat stability to the coating as applied to the enclosure,

said organic titanate being present in amount of about ½% to about 18% by weight of said pigment material,

and, an organic solvent carrier for the composition, said composition containing a weight percent total solids within a range of about 20% to about 85%.

4,382,982

PROCESS FOR PROTECTING MAGNETIC PARTICLES WITH CHROMIUM OXIDE

Francis D. Whillans, Melbourne, Australia, assignor to ICI Australia Limited, Victoria and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

Filed Dec. 2, 1980, Ser. No. 212,336

Claims priority, application Australia, Dec. 7, 1979, PD1644

Int. Cl.³ B05D *5/12, 7/00*

U.S. Cl. 427—130 **19 Claims**

1. A process for preparing protected magnetic particulate matter which process comprises coating particles of magnetic material with at least one coating compound selected from the group consisting of chromium (III) hydroxide, chromium (III) oxyhydroxide and chromium (III) oxide by a first step of depositing chromium (III) hydroxide hydrogel on the said particles by the addition of a basic reagent to an aqueous solution of a chromium (III) salt containing the said particles wherein the said basic reagent is generated in situ by the hydrolysis of urea precursor, and a second step of heating the hydrogel-coated magnetic material to a temperature above 100° C.

4,382,983

METHOD FOR THE FORMATION OF ABRASION-RESISTANT COATING FILM

Masahiro Yuyama, and Mikio Futagami, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 15, 1981, Ser. No. 283,784

Claims priority, application Japan, Jul. 24, 1980, 55/102187; Jul. 24, 1980, 55/102188; Jul. 24, 1980, 55/102189

Int. Cl.³ B05D *3/02*

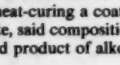
U.S. Cl. 427—386 **4 Claims**

1. In a method for forming an abrasion-resistant coating film by heat-curing a coating composition on the surface of a substrate, said composition composed mainly of a partially hydrolyzed product of alkoxysilane represented by the formula:

$$R_n^4Si(OR^5)_{4-n}$$

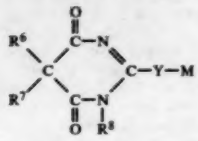
wherein n is an integer of 0 to 2; R^4 is alkyl having 1 to 6 carbon atoms, phenyl, allyl, vinyl, methacryloxy, methacryloxyalkyl, mercaptoalkyl, aminoalkyl, epoxyalkyl, epoxyalkyloxy, epoxyalkyloxyalkyl, tetrahydrofuryl or fluoroalkyl; and R^5 is alkyl having 1 to 4 carbon atoms, the improvement which comprises using as a curing catalyst at least one alkali metal salt selected from the group consisting of

(A) alkali metal salts of thio-acids, dithio-acids and their derivatives represented by the formula:



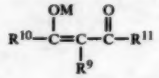
wherein X is $—NR^1R^2$ or R^3; R^1 and R^2 are each hydrogen, alkyl having 1 to 4 carbon atoms, phenyl, benzyl or allyl; R^3 is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl, benzyl or alkoxy having 1 to 6 carbon atoms; Y is oxygen or sulfur; and M is lithium, sodium or potassium;

(B) alkali metal salts of barbituric acid and its derivatives represented by the formula,



wherein R^6 and R^7 are each hydrogen, alkyl having 1 to 5 carbon atoms, phenyl, benzyl, allyl or cyclohexyl; R^8 is hydrogen or methyl; Y is oxygen or sulfur; and M is lithium, sodium or potassium and

(C) alkali metal salt of a β-dicarbonyl compound represented by the formula:



wherein R^9 is hydrogen, alkyl having 1 to 4 carbon atoms or alkylene having 3 to 4 carbon atoms; R^{10} and R^{11} are each alkyl, alkoxy having 1 to 4 carbon atoms, alkoxycarbonyl having 2 to 5 carbon atoms, phenyl, benzyl or alkylene having 3 to 4 carbon atoms; and M is lithium, sodium or potassium.

4,382,984

STABLE AQUEOUS POLY-(HYDROXYMETHYL METHACRYLATE) DISPERSIONS AND COATING COMPOSITIONS CONTAINING SAME

Carlos J. Martinez, Edison, and Michael A. Tobias, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,699

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—391 **10 Claims**

1. Stable aqueous dispersions comprising at least 15 weight percent of poly-(hydroxyethyl methacrylate) homopolymer based on the total composition, in a solvent mixture consisting essentially of water and a water miscible lower alkanol in which water comprises at least about 40 weight percent of the solvent mixture and the lower alkanol comprises at least about 30 weight percent of the solvent mixture.

7. A coating composition comprising the stable aqueous dispersion of claim **1** and an aminoplast curing agent in an amount sufficient to produce a hard coating upon heat curing.

9. The coating composition of claim **7** containing an acid curing catalyst.

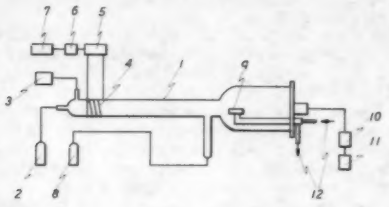
10. A method of coating a heat sensitive substrate of wood, paper or plastic, comprising applying the composition of claim **9** and curing to a hard film at a temperature sufficient to effect cure but insufficient to affect the substrate.

4,382,985

PROCESS FOR FORMING FILM OF FLUOROALKYL ACRYLATE POLYMER ON SUBSTRATE AND PROCESS FOR PREPARING PATTERNED RESIST FROM THE FILM

Shuzo Hattori; Shinzo Morita, both of Nagoya, and Tsuneo Fujii, Suita, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 9, 1981, Ser. No. 310,407
Claims priority, application Japan, Oct. 11, 1980, 55-142198; Jun. 1, 1981, 56-84092; Jun. 1, 1981, 56-84093
Int. Cl.³ B05D *3/04, 7/24, 3/14*
U.S. Cl. 427—41 2 Claims



1. A process for forming a polymer film on a substrate which comprises polymerizing a fluoroalkyl acrylate having the following general formula:

$$R_fR^2OCOCR^1{=}CH_2$$

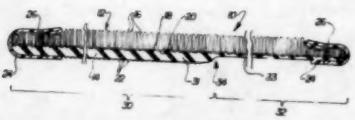
wherein R_f is a C_1 to C_{15} straight or branched perfluoroalkyl group or a C_1 to C_{15} straight or branched perfluoroalkyl group in which at least one of the fluorine atoms is substituted by hydrogen atom and which has at least one fluorine atom, R^1 is hydrogen atom, methyl group, ethyl group or a halogen atom, and R_2 is a bivalent hydrocarbon group, by the action of an inert gas excited by glow discharge in the presence of a substrate so as to form a polymer on the substrate in the form of film.

4,382,986

AUTOMOBILE FLOOR MAT WITH TWO BASE PORTIONS OF DIFFERENT ELASTOMERIC MATERIALS

Harold Reuben, Akron, Ohio, assignor to The Akro Corporation, Canton, Ohio

Filed Feb. 9, 1982, Ser. No. 347,343
Int. Cl.³ B32B *5/18;* D04H *11/00*
U.S. Cl. 428—88 21 Claims



1. An automobile floor mat comprising:

a first portion adapted to contact a generally horizontal portion of an automobile floor,

said first portion having a first base portion of a first monolithic elastomeric material with a Shore A durometer greater than about 70,

a second portion adapted to contact an inclined portion adjacent said generally horizontal portion of an automobile floor,

said second portion having a second base portion of a second monolithic elastomeric material,

said first base portion and said second base portion being connected at a hinge area such that the mat can be molded in a single molding operation, and

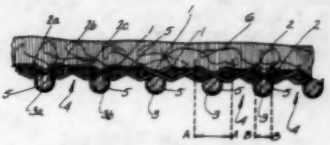
said second monolithic elastomeric material being less stiff than said first elastomeric material to permit said second portion to bend relative to said first portion at said hinge area in said second portion.

4,382,987

PAPERMAKER'S GROOVED BACK FELT

Frederick R. Smart, Averill Park, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Jul. 30, 1982, Ser. No. 403,302
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—212 11 Claims



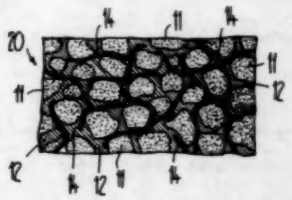
1. A papermaking fabric having a face side and a machine side, said fabric comprising interwoven warp and filling yarns on the face side of the fabric, bulky rib forming yarns on the machine side of the fabric, said rib forming yarns which comprise a mixture of staple or multifilament fibers with relatively low and relatively high melting points extending in parallel relation and lying in spaced apart relation relative to each other to define channels therebetween, a batt surface on the face side of said fabric needled through said warp and filling yarns and into said rib forming yarns, with the channels therebetween being essentially free of batt fibers, said rib forming yarns being heat fused to render them essentially incompressible in use.

4,382,988

PROCESS FOR PREPARING A BITUMINOUS GROUND COVERING

Ernst Gallmann, Wettswil, Switzerland, assignor to Kibag Aktiengesellschaft Baggerei-Unternehmungen & Kieswerke am Zürichsee, Zürich, Switzerland

PCT No. PCT/CH79/00146, § 371 Date Aug. 6, 1980, § 102(e) Date Jul. 21, 1980, PCT Pub. No. WO80/01179, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 21, 1979, Ser. No. 199,728
Claims priority, application Switzerland, Dec. 6, 1978, 12449/78
Int. Cl.³ D03D *13/00*
U.S. Cl. 428—222 16 Claims



1. A process for preparing a bituminous ground coating, said process comprising the steps of:

admixing a solid particle mixture including a predetermined coarsest fraction to a bituminous binder in a flowable state to form a mix;

admixing ether to said mix or to said solid particle mixture finite, generally straight metallic fibers having a length

which corresponds at least to the mesh size of said coarsest fraction to obtain a fiber-containing mix;

applying said fiber-containing mix on the ground to be covered to form a cover layer; and

applying external pressure to compact said cover layer and deforming said fibers about said solid particles within said mix whereby the fibers entangle with said particles and with each other to enhance bonding between fiber containing solids and said binder.

12. A bituminous surfacing produced according to the process of claim 1.

4,382,989

ROOFING ASPHALT FORMULATION

Irving B. Chang, Morristown, and Robert E. Beckwith, Jr., Bernardsville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 202,206, Oct. 30, 1980, Pat. No. 4,328,147. This application Oct. 26, 1981, Ser. No. 314,903

Int. Cl.³ D04H *1/08*

U.S. Cl. 428—280 7 Claims

1. An improved asphalt coated roofing material of the type having roofing felt coated with asphaltic coating composition wherein the improvement comprises a filled asphaltic coating composition comprising: about 40 percent to about 99 percent by weight of asphaltic composition comprising, about 52 to about 99 percent by weight of oxidized asphalt, about 1 to about 8 percent by weight of oxidized polyethylene and 0 to about 40 percent by weight of a saturant; and about 1 percent to about 60 percent by weight of stone dust.

4,382,990

COATING COMPOSITION FOR FIBROUS POLYOLEFIN SHEETS

Don M. Coates, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 149,577, May 14, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 276,669

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—290 10 Claims

1. An improved coating composition in the form of an aqueous dispersion that contains 10 to 40% by weight of solids, which solids include effective amounts of a water-insoluble wax, a nonionic surfactant and a water-insoluble resin, the improvement comprising an effective amount of finely divided polytetrafluoroethylene particles which provides a fibrous polyolefin sheet on which the coating composition is applied and dried with improved blood-barrier characteristics.

2. The coating composition of claim 1 wherein the polytetrafluoroethylene particles amount to 10 to 35% by weight of the coating composition, on a dry solid basis.

3. The coating composition of claim 1 wherein

(a) the water-insoluble wax is dispersible in water at a concentration of 10% by weight based on the total amount of wax and water, and requires for dispersion in water only a nonionic surfactant or a mixture of two or more nonionic surfactants in an amount of at least 15% and not more than 100% by weight based on the amount of wax;

(b) the nonionic surfactant has a hydrophilic-lipophilic balance in the range of about 6 to about 10 and is present in an amount in the range of about 15 to about 100% by weight based on the amount of wax;

(c) the water-insoluble binder is capable of wetting a fibrous polyolefin sheet and in the form of an aqueous dispersion, does not coagulate in the presence of an antistat;

(d) the polytetrafluoroethylene particles amount to 15 to 35% by weight of the dry coating composition.

5. A nonwoven sheet of polyethylene film-fibril elements coated with the composition of claim 1, 2 or 3 and dried.

4,382,991

SIZING COMPOSITION AND SIZED STRAND USEFUL AS REINFORCEMENT

Gary A. Pollman, Sylvania, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 72,713, Sep. 4, 1979, Pat. No. 4,301,052. This application Apr. 24, 1981, Ser. No. 257,084

Int. Cl.³ B23B *17/02, 17/04*

U.S. Cl. 428—391 13 Claims

1. Glass fiber strand for use as reinforcement with molding compounds having a dried residue of an aqueous sizing composition where the dried residue constitutes 0.2 percent to 3 percent of said glass fiber strand and, said aqueous sizing composition comprises in weight percent of the aqueous sizing composition: 2 to 40 weight percent of curable polyurethane latex as the sole polymeric film former, 0.05 to about 2 weight percent of a cationic silane having unsaturation, and about 0.05 to about 2.0 weight percent of polyamine silane, and water in the remaining amount.

3. The method of forming glass fiber strand for use as reinforcement with molding compounds to produce molded articles, which comprises drawing glass streams from orifices in a bushing to form individual glass fibers; moving the fibers from the bushing at a high rate of speed and forming them into a strand; applying to the fibers, while they are moving at this speed and before strand formation an aqueous sizing solution; comprising: about 2 to about 40 weight percent of curable polyurethane latex as the sole polymeric film former, about 0.05 to about 2.0 weight percent of cationic silane with unsaturation and about 0.05 to about 2.0 weight percent of a polyamine silane, and water in an amount to give a solids content from about 1 to about 20 weight percent where all the weight percentages are based on the total sizing composition; drying the strand so formed and chopping said strands.

4,382,992

POTENTIALLY BULKY YARN

Yukio Otaki; Masatoshi Mineo; Kiyoshi Nakagawa, all of Mishima; Shiro Nishiumi, and Yoshio Aratani, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 1,397, Jan. 5, 1979, Pat. No. 4,263,368, which is a continuation of Ser. No. 813,177, Jul. 5, 1977, abandoned, which is a continuation of Ser. No. 592,519, Jul. 2, 1975, abandoned. This application Jul. 21, 1980, Ser. No. 172,771

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—373 1 Claim

1. A potentially bulky yarn which is a substantially non-interlaced multifilament yarn comprising a multiplicity of polyester filaments simultaneously satisfying the characteristic values of about:

(A) $R_{max}/R \leqq 2.5$

(B) $\Delta S_5 \geqq 1.5$ and $\Delta S_{50} \leqq 3.0$

(C) $Y \geqq 1.3$
(D) $X_7 - X \leqq 1.0$
wherein R_{max} is maximum tension fluctuation width, R is average tension fluctuation width of a normal portion, ΔS_5 is difference in maximum shrinkage among each filament of a sample having a length of 5 cm, ΔS_{50} is difference in maximum shrinkage among each filament of a sample having a length of 50 cm, X_7 is maximum tension, X is average tension and Y is degree of bulkiness/dry heat shrinkage, each of said filaments having alternating heat-treated and non-heat-treated portions along its length, and wherein in at least one of said heat-treated portions is adjacent to and in contact with a non-heat-treated portion of another filament.

4,382,993

TIRE CORD FINISH, POLYESTER CORD PRODUCED THEREWITH AND TIRES USING THE POLYESTER CORD

Russell T. McIntyre, Hilliard, Ohio, and John P. Redston, Montclair, N.J., assignors to Stokely-Van Camp, Inc., Indianapolis, Ind.

Filed Jun. 8, 1981, Ser. No. 271,430
Int. Cl.³ B29H *9/04*; D06M *13/20, 15/08*
U.S. Cl. 428—395 **29 Claims**

1. A finish composition for polyester tire cord which comprises:
- about 57 weight percent of lubricant comprising transesterified coconut oil and glycerol trioleate, said lubricant including from about 10 to about 90 percent coconut oil and from about 10 to about 90 percent glycerol trioleate;
- from about 18 to about 25 weight percent of emulsifier polyoxyethylene castor oil;
- from about 5.5 to about 12.5 weight percent of an emulsifier material selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;
- from about 7 to about 12 weight percent of emulsifier selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and
- about 3 weight percent of antioxidant 4,4' butylidene-bis (6-tert-butyl-m-cresol).

16. A tire cord comprising polyester fibers having on the surfaces thereof from about 0.6 weight percent to about 1.2 weight percent, based upon the weight of the resulting cord, of a finish composition which comprises:
- from about 55 to about 60 weight percent of a lubricant comprising tranesterified high lauric oil and high oleic oil, said lubricant including from about 10 to about 90 percent high lauric oil and from about 10 to about 90 percent high oleic oil;
- from about 15 to about 28 weight percent of emulsifier polyoxyethylene castor oil;
- from about 4 to about 15 weight percent of an emulsifier material selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;
- from about 7 to about 12 weight percent of emulsifier selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and
- from about 1 to about 5 weight percent of a suitable antioxidant.

4,382,994

POLYACETAL RESIN MOLDED ARTICLE HAVING REDUCED WATER CONTAMINATION

Kenzi Matsumi, Fuji, Japan, assignor to Polyplastics Co., Ltd., Osaka, Japan

Continuation of Ser. No. 269,806, Jan. 3, 1982, abandoned, which is a continuation of Ser. No. 83,090, Oct. 9, 1979, abandoned. This application Mar. 31, 1982, Ser. No. 363,786
Claims priority, application Japan, Oct. 25, 1978, 53-131432
Int. Cl.³ B32B *9/04*; C08G *2/10*; B29C *25/00*
U.S. Cl. 428—411 **21 Claims**

1. A polyacetal resin molded article which exhibits reduced water contamination when in contact with water, said molded article bearing a hydrophobic film upon the surface thereof, said molded article being formed by molding a substantially homogeneous polyacetal resin composition comprising an intimate admixture of a polyacetal resin and a substantially water insoluble substance selected from the group consisting of paraffins, silicon oils, fluorinated oils, metal soaps, higher fatty acid bisamides, higher alcohols, higher fatty acid ethers, and mixtures of two or more of the above, and heating said molded article in air or an inert gas to a temperature within the range of about 80° C. to 130° C. whereby said water insoluble substance forms said hydrophobic film.

15. A method for forming a molded article comprised of a polyacetal resin bearing a hydrophobic film thereon and which exhibits reduced water contamination when in contact with water, said method comprising forming a molded article comprised of an intimate admixture of said polyacetal resin and a substantially water insoluble substance selected from the group consisting of paraffins, silicon oils, fluorinated oils, metal soaps, higher fatty acid bisamides, higher alcohols, higher fatty acid ethers and mixtures of two or more of the above, and heating said molded article in air or in an inert gas to a temperature in the range of about 80° C. to 130° C. whereby said water insoluble substance forms said hydrophobic film.

4,382,995

MULTI-LAYERED SOLAR HEAT REFLECTING SAFETY GLASS

Chii H. Lin, No. 262, Feng Jen Rd., Feng Shan City, Kaohsiung Hsien, China

Filed Sep. 14, 1981, Ser. No. 301,578
Int. Cl.³ B32B *17/10, 27/38, 27/30*
U.S. Cl. 428—415 **11 Claims**

1. A multi-layered solar heat reflecting safety plate glass, comprising a laminate of:
- a first transparent plate glass having one surface coated with a solar heat reflecting metallic oxide film and bonded to a colored solar heat absorbing plate glass by a first bonding agent and the other surface being bonded to a second transparent plate glass by means of a second bonding agent, said second agent being capable of preventing the glass laminate from shattering when broken.

6. A multi-layered solar heat reflecting safety plate glass, comprising a laminate of:
- a first transparent plate glass having one surface coated with a solar heat reflecting metallic oxide film the other surface of said oxide film being bonded to a second transparant glass by means of a first bonding agent, and
- a colored solar heat absorbing plate glass bonded to the other surface of said second transparent glass by a second bonding agent, said second bonding agent being capable of preventing the glasses from shattering when broken.

4,382,996

LAMINATED SAFETY GLASS

Takeshi Mori, Kusatsu; Toshiyuki Takashima; Kenichi Asahina, both of Shiga; Toshiharu Matsumiya, Shinnanyo, and Ariyasu Sugita, Yamaguchi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Tokuyama Sekisui Kogyo Kabushiki Kaisha, both of Osaka, Japan

Division of Ser. No. 155,082, Jun. 2, 1980, abandoned. This application Jul. 21, 1981, Ser. No. 285,436
Claims priority, application Japan, May 31, 1979, 54-68502
Int. Cl.³ C03C *27/12;* B32B *17/10*
U.S. Cl. 428—442 1 Claim

1. In a laminated safety glass comprising two glass sheets bonded by an interlayer, the improvement wherein said interlayer comprises (A) a thermoplastic resin resulting from copolymerization of (1) 80 to 98.5% by weight of vinyl chloride, (2) 1 to 10% by weight of glycidyl methacrylate and (3) 0.5 to 10% by weight of ethylene, and (B) 10 to 40% by weight of a plasticizer.

4,382,997

SPINEL SURFACED OBJECTS

Walter W. Henslee, Lake Jackson; Stanley J. Morrow, Clute; John S. Lindsey, Houston; Christopher P. Christenson, and Hans H. Schwantje, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1980, Ser. No. 183,909
Int. Cl.³ B32B *9/04, 13/04*
U.S. Cl. 428—446 4 Claims

1. A method for preparing a spinel faced alumina or alumino silicate surface which comprises:

contacting at least the surface of an alumina or alumino silicate shape to be modified with molten or gaseous magnesium metal or a magnesium alloy for from about one and one-half to ten hours, at least until the surface in contact with the magnesium attains about 600° C. thereby to convert the surface to a $MgAl_2O_4$ spinel structure;

withdrawing the so contacted shape; and,

washing the surface so treated with a magnesium metal dissolving agent.

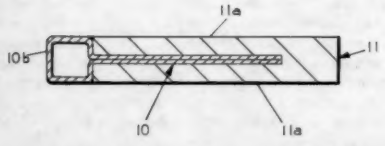
2. A refractory shape having at least one surface treated in the manner of claim 1.

4,382,998

HEAT-RESISTANT MOLDING COMPOSITION AND MOLDED PARTS FOR HANDLING HOT GLASS ARTICLES

Edward J. Stengle, Jr., Toledo, and Lester C. Minneman, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 8, 1981, Ser. No. 271,479
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—450 10 Claims



1. A moldable thermosetting composite material for handling newly-formed hot glass articles, and the like, comprising the following constituents in weight percentage:

Thermosetting	Range Weight %
Silicone Resin	24.0–40.0
Graphite	15.0–25.0
Chopped Glass Fibers	1.0–55.0
Carbon Powder	0.0–10.0
Amine Catalyst	0.0–1.0
Iron Oxide Pigment	0.0–2.0
Calcium Stearate Lubricant	0.0–1.0

said material in molded form having properties of high temperature-resistance, medium impact strength and low coefficient of friction.

2. A heat-resistant thermoset-hardened heat-cured molded article for handling newly-formed hot glass products, and the like, comprising the following constituents in weight percentage:

Thermosetting	Range Weight %
Silicone Resin	24.0–40.0
Graphite	15.0–25.0
Chopped Glass Fibers	1.0–55.0
Carbon Powder	0.0–10.0
Amine Catalyst	0.0–1.0
Iron Oxide Pigment	0.0–2.0
Calcium Stearate Lubricant	0.0–1.0

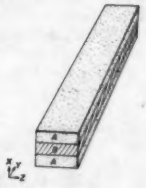
said article having at least one generally-planar surface and having properties of high-temperature resistance, medium impact strength and low coefficient of friction.

4,382,999

WATER-SWELLABLE COMPOSITE CAULKING MATERIAL FOR PREVENTING WATER LEAKAGE

Hiroshi Harima; Yoshihiro Yoshioka, both of Hasaki; Toshihiro Kimura, Ageo, and Kazuhiro Takasaki, Warabi, all of Japan, assignors to Kuraray Isoprene Chemical Co. Ltd., Ibaraki and C. I. Kasei Co. Ltd., Tokyo, both of, Japan

Filed Feb. 2, 1982, Ser. No. 344,946
Claims priority, application Japan, Feb. 16, 1981, 56-21696
Int. Cl.³ B32B *25/08*
U.S. Cl. 428—494 17 Claims



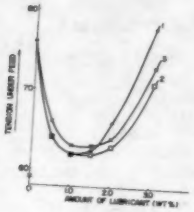
1. A water-swellable caulking material of a composite body of stratified structure comprising at least one water-swellable rubbery layer containing a highly water absorbing resin dispersed in the matrix of a rubber and at least one rubbery layer not swellable in water integrally bonded together, the latter non-swellable rubbery layer serving to resist the expansion of the former water-swellable rubber layer in the directions other than the direction perpendicular to the plane of the layers when swollen in water.

4,383,000

MAGNETIC RECORDING MEDIUM

Kuniharu Fujiki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 7, 1981, Ser. No. 223,087
Claims priority, application Japan, Jan. 11, 1980, 55-1354
Int. Cl.³ B32B 27/30
U.S. Cl. 428—522 6 Claims



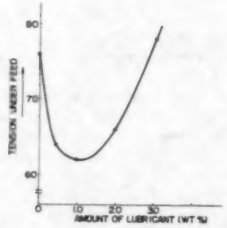
1. A magnetic recording medium comprising a support and a magnetic recording layer formed on said support, said magnetic recording layer comprising a magnetic powder dispersed in a binder and including a lubricant which contains at least an ester of an aliphatic acid having 14–18 carbon atoms and an alcohol of the general formula, $(CH_3)_2CH(—CH_2)—_nOH$, in which n is an integer of 1 to 5, said ester being contained in an amount of from about 0.2 to 2.5% by weight of said magnetic powder.

4,383,001

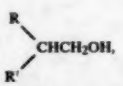
MAGNETIC RECORDING MEDIUM

Kuniharu Fujiki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 7, 1981, Ser. No. 223,088
Claims priority, application Japan, Jan. 11, 1980, 55-1355
Int. Cl.³ B32B 27/30
U.S. Cl. 428—522 8 Claims



1. A magnetic recording medium comprising a support and a magnetic recording layer formed on said support, said layer comprising a magnetic powder dispersed in a binder and a lubricant which contains at least an ester of a linear aliphatic acid having 14–18 carbon atoms and a monohydric alcohol of the general formula,



in which R and R' are independently a linear alkyl group having 5–10 carbon atoms, said ester being contained in an amount of about 0.2 to 2.5 % by weight of the magnetic powder.

4,383,002

JEWELLERY POST

Dorin T. Manolescu, Toronto, Canada, assignor to French Jewellery Company of Canada Limited, Toronto, Canada

Filed Aug. 28, 1981, Ser. No. 297,393
Int. Cl.³ A44C 7/00
U.S. Cl. 428—580 11 Claims

1. A jewellery post comprising an elongated member having a longitudinally extending passage adjacent one end thereof, and a plug of bonding material within the passage adjacent said one end, said bonding plug being a sliding fit in the passage and having a length which is short compared to the length of the tubular member.

4,383,003

TRANSFER LAMINATION OF COPPER THIN SHEETS AND FILMS, METHOD AND PRODUCT

Eric Lifshin, Loudonville; Joseph D. Cargioli, Schenectady; Stephen J. Schroder, Schenectady, and Joe Wong, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,003
Int. Cl.³ B32B 15/20
U.S. Cl. 428—611 6 Claims

1. A metal-clad laminate comprising a substrate, a layer of copper and bonding means located between said substrate and said copper layer for bonding said substrate and copper layer together, said bonding means consisting of an ultra-thin film of zinc on said copper layer together with an ultra-thin film of oxide selected from the group consisting of aluminum oxide and silicon dioxide disposed between and in contact with said zinc film and said substrate.

4,383,004

THERMOCOUPLE BIMETAL HAVING A HIGH APPLICATION LIMIT, AND METHOD OF PRODUCING THE SAME

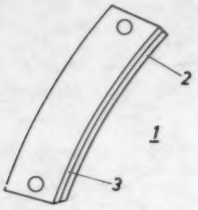
Heinz Spengler, Pforzheim, Fed. Rep. of Germany, assignor to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,263
Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017044
Int. Cl.³ B32B 15/01, 15/08
U.S. Cl. 428—619 2 Claims

1. A thermocouple bimetal having a high application limit, comprising at least one metallic component of high thermal expansion, and at least one component of low thermal expansion which is bonded to said metallic component, said component of high thermal expansion being a thermally age-hardenable iron-nickel-manganese-titanium alloy with 14% nickel, 9% manganese and 2% free titanium, remainder iron, and said component of low thermal expansion being a thermally age-hardenable iron-nickel-cobalt-titanium alloy with 34% nickel, 6% cobalt, 1.5% free titanium, 0.03% maximum carbon, remainder iron.

2. A thermocouple bimetal having a high application limit, comprising at least one metallic component of high thermal

expansion, and at least one component of low thermal expansion which is bonded to said metallic component, said component of high thermal expansion being a thermally age-hardenable iron-nickel-manganese-titanium alloy with 14% nickel, 9%



manganese and 2% free titanium, remainder iron, and said component of low thermal expansion being a thermally age-hardenable iron-nickel-cobalt-titanium alloy with 32.5% nickel, 14.5% cobalt, 1.6% free titanium, 0.03% maximum carbon, remainder iron.

4,383,005

RUBBER MIXTURES AND VULCANIZATES PRODUCED THEREFROM

Joachim Weil, and Richard Sattelmeyer, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 314,887

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043227

Int. Cl.³ B32G *31/00*

U.S. Cl. 428—625 **11 Claims**

1. A rubber composition having an improved adhesion to steel cord comprising

(a) a rubber vulcanisable with sulfur,

(b) at least one reinforcing filler containing between 10 and 50% by weight of active silicic acid,

(c) a vulcanisation agent selected from the group consisting of sulfur and a sulfur donor,

(d) at least one phenol resin derived from at least one monovalent phenol or polyvalent polynuclear phenol or polynuclear phenol and aldehyde,

(e) a compound of a metal being capable of having various valencies and

(f) a methylene donor.

4,383,006

HOT-DIP GALVANIZED STEEL SHEET WITH ZERO-SPANGLE HAVING EXCELLENT AGE-FLAKING RESISTANCE, AND HOT-DIP GALVANIZING PROCESS AND COMPOSITION OF MOLTEN ZINC BATH THEREFOR

Yoshio Shindo; Teppei Tamura, both of Kisarazu; Motoo Kabeya; Mitsumasa Nagahisa, both of Kimitsu, and Hidejirou Asano, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Japan

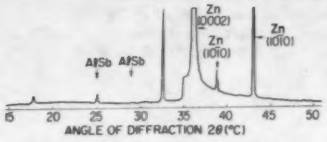
Filed Jul. 8, 1981, Ser. No. 281,505

Claims priority, application Japan, Jul. 18, 1980, 55-98251

Int. Cl.³ B32B *15/18*; C22C *18/04*

U.S. Cl. 428—659 **13 Claims**

1. An improved zero-spangle galvanized steel sheet having excellent resistance to age-flaking of its galvanized coating comprising a steel sheet provided at least on one side thereof with a hot-dip galvanized coating of a novel composition consisting of 0.1 to less than 0.2 weight % Al, 0.1–0.5 weight % Sb, unavoidable impurities including Pb, Cd and Sn but not including Fe in a total amount of less than 0.02 weight % and the remainder Zn, the ratio of Sb/Pb in said coating being



10–250, and the Al existing in said coating being present as an Al-Sb eutectic.

4,383,007

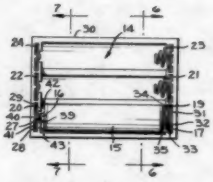
BATTERY COMPARTMENT

Harold R. Murphy, Herkimer, N.Y., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 161,784, Jun. 23, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,821

Int. Cl.³ H01M *2/20*

U.S. Cl. 429—1 **14 Claims**



1. A battery compartment for batteries of the type having a cylindrical body and a first terminal protruding from one of its ends to provide a first electrical potential, the other end of the cylindrical body including a second terminal which provides a second electrical potential, comprising:

(a) a first contact member, the contact member being resilient;

(b) a second contact member having at least one tab; and

(c) a unitary housing having first means for frictionally holding the first contact member and second means cooperating with said at least one tab for frictionally holding the second contact member opposite the first contact member, said second means including an opening which is suitable for accommodating the first terminal in abutment with the second contact and a surface for preventing engagement between the second contact and the second terminal, the first and second contacts being spaced apart a predetermined distance, whereby when a battery is properly inserted in the compartment its second terminal compresses the first contact and the resulting compression force biases the first terminal against the second contact member.

4,383,008

FUEL CELL ASSEMBLY WITH ELECTROLYTE TRANSPORT

Chang V. Chi, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Dec. 7, 1981, Ser. No. 327,970

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—38 **22 Claims**

1. A fuel cell assembly comprising:

first and second electrodes;

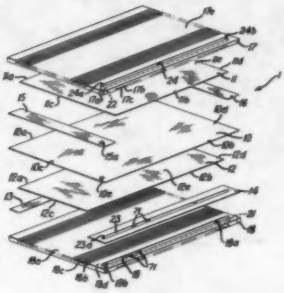
an electrolyte matrix situated between said electrodes;

first and second plates situated adjacent said first and second electrodes, and defining therewith first and second cham-

bers for carrying first and second process gases respectively;

and means for carrying electrolyte through said first plate into communication with said matrix and through said second plate comprising:

an elongated groove in said second plate, said groove being in communication with said matrix;



first passage means for carrying electrolyte through said first plate and for communicating with said groove at a first point;

and second passage means for communicating with said groove at a point exclusive of said first point and for carrying electrolyte exclusively through said second plate.

4,383,009

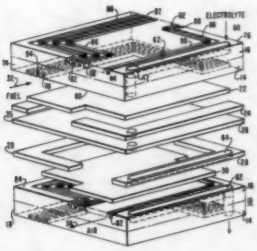
LOW HYDROSTATIC HEAD ELECTROLYTE ADDITION TO FUEL CELL STACKS

Richard E. Kothmann, Churchill Boro, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 21, 1981, Ser. No. 303,810

Int. Cl.³ H01M *8/24*

U.S. Cl. 429—39 **10 Claims**



1. In a system for supplying electrolyte, fuel and an oxident to a fuel cell stack having at least two fuel cells, each of said cells having a pair of spaced electrodes and a matrix sandwiched therebetween, fuel and oxidant paths associated with a bipolar plate separating each pair of adjacent fuel cells and an electrolyte fill path for adding electrolyte to said cells and wetting said matrices, the improvement comprising:

means for flowing electrolyte through said fuel cell stack in a back and forth fashion in a path in each cell substantially parallel to one side of opposite sides of said bipolar plate, exposed to said matrices to produce a head on each said matrix less than the thickness of a cell due to frictional pressure drop in said path to thereby avoid flooding of said electrodes.

4,383,010

PROCESS FOR THE PRODUCTION OF A LAYER OF AN ELECTRODE FOR A CELL, PARTICULARLY FOR A FUEL CELL AND ELECTRODE CONTAINING SUCH A LAYER

Gustaaf J. F. Spaepen, Dessel, Belgium, assignor to Electrochemische Energieconversie, NV, Mol, Belgium

Filed Jul. 9, 1981, Ser. No. 281,851

Claims priority, application Netherlands, Jul. 9, 1980, 8003949

Int. Cl.³ H01M *4/88*

U.S. Cl. 429—42 **11 Claims**

1. A process for the production of a layer for an electrode for a cell, particularly for a fuel cell, comprising the steps of:

(a) mixing an electrically conductive fine-grained powder and a powdery binder in a dry condition;

(b) subjecting the conductive fine-grained powder and a powdery binder mixed according to step (a) to agglomeration in a dry condition;

(c) breaking the agglomerates formed according to step (b) to obtain particles;

(d) pressing the particles obtained according to step (c) to form a mass; and

(e) rolling the mass obtained according to step (d) to form a layer.

4,383,011

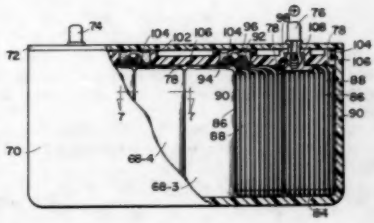
MULTICELL RECOMBINING LEAD-ACID BATTERY

Donald H. McClelland, Littleton; Toshio Uba, Denver, and Larry K. W. Ching, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Dec. 29, 1980, Ser. No. 221,226

Int. Cl.³ H01M *10/12*

U.S. Cl. 429—54 **37 Claims**



1. In combination, a sealed lead-acid gas recombining battery capable of discharge and charge in any attitude without electrolyte loss, comprising:

a plurality of electrochemical cells housed in a sealed monobloc container, the cells individually comprising porous positive and porous negative plates sandwiching a porous compressible separator under firm mutual stacking pressure, and an acid electrolyte in liquid form and of limited amount tightly absorbed within the plates and separator;

said separator having a relatively greater electrolyte absorptive power than the adjoining plates with the bulk of the electrolyte of each cell being retained in the pores of the separator, and a substantial portion of the pore volume of the plates remaining voided thereby facilitating gas transport during the gas recombination reaction upon charging; and

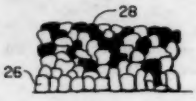
partition members segregating the cells from direct physical contact yet constructed to define a gas space common to all the cells of the battery.

4,383,012

LIQUID CATHODE ELECTROCHEMICAL CELL WITH IMPROVED GEOMETRY AND CONTAINING A HIGH EFFICIENCY CATHODE CURRENT COLLECTOR

Joseph R. Driscoll, Sunnyvale, Calif., assignor to Altus Corporation, San Jose, Calif.

Filed Aug. 6, 1981, Ser. No. 290,607
Int. Cl.³ H01M 4/36
U.S. Cl. 429—101 12 Claims



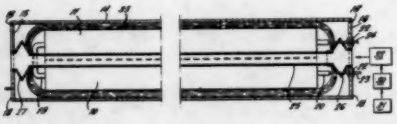
1. An electrochemical cell comprising:
an anode;
a liquid cathode including an ionically conductive solute;
a solid nonconsummable porous current collector having a first constituent consisting of an electrically conducting material which is less electropositive than said anode, and a second constituent consisting of an electrically nonconductive material, said first and second constituents being combined such that the resistivity of said current collector varies inversely with the distance from said anode;
a porous separator mechanically separating said anode from said current collector;
wherein substantially the total volume of said liquid cathode in said cell is contained within the pores of said current collector and said separator.

4,383,013

HIGH TEMPERATURE MULTICELL ELECTROCHEMICAL STORAGE BATTERIES

Peter J. Bindin, Runcorn, and Ivor W. Jones, Chester, both of England, assignors to Chloride Silent Power Limited, London, England

Filed Jul. 14, 1981, Ser. No. 283,309
Claims priority, application United Kingdom, Jul. 23, 1980, 8024119
Int. Cl.³ H01M 6/36
U.S. Cl. 429—112 15 Claims



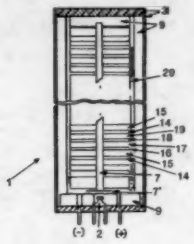
1. A multicell high temperature electrochemical storage battery comprising a container having a wall enclosing an evacuated region, a plurality of cells housed within said container, radiation-inhibiting means located in said container in said evacuated region between the cells and said wall, and at least one flow passage through the container for a heating or cooling means, said flow passage being a tube of thermally conductive material and each of the cells being in thermal contact with said tube and wherein each cell has a thermally conductive outer wall to facilitate heat transfer between the cell and said at least one tube and wherein said radiation-inhibiting means surround the group of cells within the battery housing.

4,383,014

ADDITIVE FOR IRON DISULFIDE CATHODES USED IN THERMAL BATTERIES

James R. Armijo, and Jimmie Q. Searcy, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,151
Int. Cl.³ H01M 4/52
U.S. Cl. 429—112 12 Claims



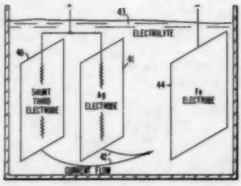
1. In a depolarized thermal battery having a plurality of single cell pellets arranged in a stack, with each single cell comprising a heat pellet and, two current collectors having an anode pellet, a separator pellet, and a cathode pellet comprised of FeS_2 and a solid electrolyte, sandwiched therebetween, said thermal battery further including means for activating the battery by melting the electrolyte, the improvement wherein the depolarizer comprises an amount of particulate $CaSi_2$ effective to substantially eliminate the occurrence of a voltage spike during the initial period of activation of the depolarized thermal battery.

4,383,015

IRON-SILVER BATTERY HAVING A SHUNT ELECTRODE

Edward S. Buzzelli, Export, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 8, 1982, Ser. No. 338,459
Int. Cl.³ H01M 6/04
U.S. Cl. 429—206 10 Claims



1. An iron-silver battery comprising a case within which are disposed:
(1) at least one positive electrode plate comprising:
(a) a porous plaque comprising silver active electrode material,
(b) an electrical lead tab attached to the electrode,
(2) at least one negative electrode plate comprising:
(a) a porous, electrode structure comprising iron active material,
(b) an electrical lead tab attached to the electrode,
(3) at least one shunt electrode connected to and electrically in parallel with the positive electrode plate comprising:
(a) a porous structure comprising a material having a lower oxygen evolution potential than silver,
(b) an electrical lead tab attached to the shunt electrode,

(4) a separator between the positive and negative plates and between the plates and the shunt electrode;
(5) an electrolyte solution; and
(6) means for making electrical connections to the plates in a manner such that the positive plate and the shunt electrode are connected to a positive terminal, and the negative plate is connected to a negative terminal.

4,383,016

METHOD FOR REPAIRING GLASS PHOTOMASKS

Dennis S. Postupack, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 25, 1981, Ser. No. 305,430
Int. Cl.³ G03F *5/00*; C03C *15/00, 17/00*; G02B *5/22*
U.S. Cl. 430—5 **9 Claims**

1. In a method of making a patterned photomask plate utilizing a glass substrate for use in a photofabrication process, wherein defects appear as discontinuities in the photomask pattern, the improvement which comprises contacting said defect area with a solution of a nickel compound comprising reducible nickel ions and a solution of a reducing agent capable of reducing said nickel ions in order to deposit a nickel-containing coating having a sufficient density to mask actinic radiation employed in said photofabrication process.

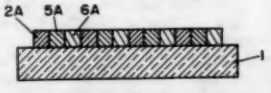
6. The method according to claim 1, wherein the photomask pattern is prepared by providing a glass substrate with a layer of photographic emulsion containing silver halide on a first surface of the glass substrate; placing a master mask over the photographic emulsion layer and exposing the photographic emulsion to actinic radiation through the master mask; contacting the exposed photographic emulsion with photographic developing solutions, thereby producing on the first surface of the flat glass substrate a pattern of electroconductive silver-containing emulsion areas and silver-free areas; applying a first electrode layer onto the developed photographic emulsion on the first side of the glass substrate and applying a second electrode layer onto the glass surface on the opposite side of the glass substrate from said first surface; applying a direct current electrical field between the electrode layers so that electric charge passes through the silver-containing emulsion areas and the thickness of the glass substrate thereby inducing electromigration of silver ions from the silver-containing emulsion areas into portions of the glass underlying the silver-containing emulsion areas, while the temperature is maintained between about 100° and 350° C.; maintaining the glass at an elevated temperature in the presence of a reducing agent for a sufficient time to reduce and agglomerate the migrated silver ions within the glass, thereby producing a stained pattern within the surface of the glass.

4,383,017

MANUFACTURING METHOD OF STRIPE FILTER

Shimizu Hirofumi; Yamano Akira, and Ikeuchi Shinzo, all of Kyoto, Japan, assignors to Dainippon Screen Mfg., Ltd., Kyoto, Japan

Filed Jul. 1, 1981, Ser. No. 279,674
Claims priority, application Japan, Jul. 3, 1980, 55-92153; Oct. 29, 1980, 55-152784
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—7 **10 Claims**



1. A method of manufacturing a stripe filter having a transparent base plate and fine stripes formed thereon and assuming different colors, said method comprising a repeated series of operations including (a) applying onto and drying on the base plate a liquid colored composition which contains at least a dyestuff assuming a predetermined color, a coating material, a dissolution accelerator for the dyestuff and a photo-sensitive hardener therefor, (b) exposing predetermined portions of said composition on the plate by means of a mask having a predetermined pattern of transmitting zones in such a degree as to harden said portions, thereby forming a group of unsoluble stripes assuming said predetermined color, (c) eliminating other portions remaining unhardened by means of a solvent for said coating material, thereby said unhardened portions being dissolved into said solvent, and repeating the series of operations for required times, each time using a different liquid composition assuming a different color being used and the number of times being determined in accordance with the number of said groups.

4,383,018

COLOR IMAGING DEVICES HAVING INTEGRAL COLOR FILTER ARRAYS

Thomas W. Martin, Rochester, and M. Akram Sandhu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 71,962, Sep. 4, 1979, Pat. No. 4,266,017, which is a division of Ser. No. 884,514, Mar. 8, 1978, Pat. No. 4,196,009. This application Dec. 12, 1980, Ser. No. 215,788
Int. Cl.³ G03C *7/04*; G02B *5/22*
U.S. Cl. 430—14 **5 Claims**

1. A color filter array comprising filter means comprising a plurality of radiation intercepting means defining a planar array of filter elements, said filter means containing a transparent, polymeric layer capable of receiving a dye, wherein said filter array contains an adhesion promoting polymeric layer, which is different from the transparent polymeric layer, comprising a polyester selected from the group consisting of:
(1) polyesters having recurring carboxylate units of which at least 80 mole percent are terephthalate units, and recurring alkylene units derived from glycols of which at least 40 mole percent are ether alkylene units, with the proviso that either (a) the recurring alkylene units comprise at least 60 mole percent ether alkylene units or (b) either the recurring carboxylate units comprise at least 2 mole percent of linear aliphatic dicarboxylate units having at least 8 carbon atoms, and that when at least 10 mole percent of the carboxylate units are said linear aliphatic dicarboxylate units, the total of the mole percent of lower aliphatic dicarboxylate units of the recurring carboxylate units plus the mole percent of ether alkylene units of the recurring alkylene units is at least 60 and
(2) polyesters having recurring alkylene units and recurring carboxylate units wherein at least 30 mole percent of the carboxylate units are alicyclic dicarboxylate units and wherein the remaining carboxylate units are nonlinear aromatic dicarboxylate units.

2. The color filter array of claim 1 wherein said filter means comprises a dye in said transparent polymeric layer.

4,383,019

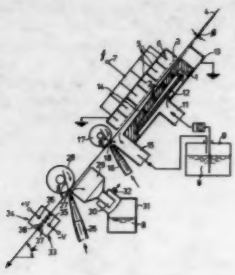
PROCESS FOR ELECTROPHOTOGRAPHIC COLOR IMAGE DEVELOPMENT ON A CONTINUOUSLY MOVING IMAGE CARRIER

Walter Simm, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,478
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032835
Int. Cl.³ G03G *13/10*
U.S. Cl. 430—45 **14 Claims**

1. A process for electrophotographic colour image development by which charge images are rendered visible by electrophoretic deposition of colour toners on a continuously moving image carrier in the form of a band in at least two development

stations, using contact electrodes, and development electrodes wherein the improvement comprises using blocking nozzles for the developer liquid, and that the development of the image



in each development station is carried out with a deviation angle α of 0° to 50° of the direction of movement of the image carrier from the horizontal plane.

4,383,020

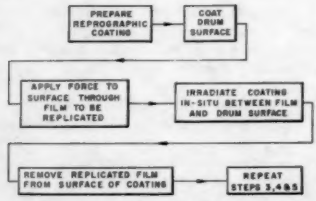
PREPARATION OF PHOTOCONDUCTIVE FILM USING RADIATION CURABLE RESIN

Sidney J. Roberts, Dennison, and Deanna M. Dowdle, Northfield, both of Minn., assignors to Sheldahl, Inc., Northfield, Minn.

Continuation-in-part of Ser. No. 111,258, Jan. 11, 1980, abandoned. This application Oct. 20, 1980, Ser. No. 198,627

Int. Cl.³ G03G *5/05*

U.S. Cl. 430—127 **3 Claims**


PREPARE REPROGRAPHIC COATING
COAT DRUM SURFACE
APPLY FORCE TO SURFACE THROUGH FILM TO BE REPLICATED
IRRADIATE COATING IN-SITU BETWEEN FILM AND DRUM SURFACE
REMOVE REPLICATED FILM FROM SURFACE OF COATING
REPEAT STEPS 3,4&5

1. In the method of preparing a reprographic film upon a substrate including the steps of coating the substrate surface with a layer of a resinous binder curable upon exposure to radiant energy including electron beam and ultraviolet radiation, the binder containing a fill of reprographic solids, and thereafter curing the resinous binder until a coherent and adherent layer is formed; said method including the steps of:

(a) forceably applying and tautly maintaining a layer of a smooth flexible film against the surface of said curable resinous binder;

(b) directing a beam of radiant energy onto said resinous binder while said layer of flexible film is held thereagainst;

(c) continuing the exposure of said resinous binder to radiant energy until cure is substantially completed; and

(d) removing said layer of flexible film from the surface of said resinous binder.

4,383,021

IMAGE-RECEIVING ELEMENT FOR THE DYE DIFFUSION TRANSFER PROCESS WITH METAL COMPLEX OF DIAZABICYCLOOCTANE

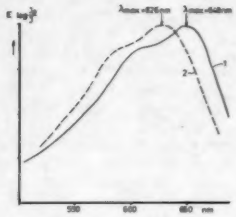
Peter Bergthaller, Cologne; Guenter Helling, Odenthal, and Jürgen Strauss, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,510

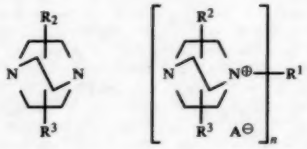
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105777

Int. Cl.³ G03C *1/40, 5/54, 1/10*

U.S. Cl. 430—213 **2 Claims**



1. An image receiving element for the dye diffusion transfer process comprising a dyeable layer on a layer support said dyeable layer being dyeable by diffusible anionic image dyes and containing a metallizing agent for the formation of metal-dye-complexes when said image dyes contain chelatable groups, wherein the improvement comprises said metallizing agent is a nickel complex of a compound of one of the following general formulae I and II



(I) (II)

wherein

R^1 represents an n-functional aliphatic hydrocarbon radical optionally containing one or a plurality of intermediate members selected from the group consisting of carbocyclic groups, heterocyclic groups, carbonyl groups, sulfonyl groups and oxygen, sulfur and nitrogen heteroatoms;

R^2 and R^3 represent hydrogen or alkyl;

$A^{\ominus}$ represents an anion; and

n represents a number of from 1 to 5.

4,383,022

DIFFUSION TRANSFER FILM UNIT WITH PROTECTIVE LAYER OF WATER SOLUBLE COPPER SALT, CHITOSAN AND GELATIN

Michael Berger, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 277,945, Jun. 26, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 392,882

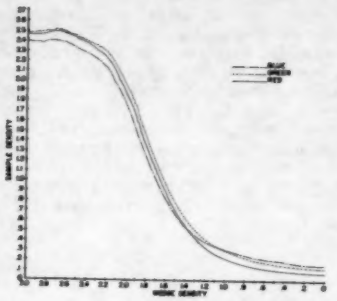
Int. Cl.³ G03C *5/54, 1/48, 7/00*

U.S. Cl. 430—228 **19 Claims**

1. A silver diffusion transfer film unit which comprises a support carrying, in order, a layer comprising silver precipitating nuclei; a protective layer comprising a water soluble copper salt, chitosan and gelatin wherein said gelatin is at least

about 1½ times, by weight, of the level of chitosan; a release layer; and a photosensitive silver halide emulsion layer.

2. The film unit of claim 1 wherein said support is transparent.



4. The film unit of claim 2 which includes an additive color screen.

4,383,023

DYE MORDANTING DEVELOPMENT

Frank L. Schadt, III, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1981, Ser. No. 307,647

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—264 **8 Claims**

1. A process in which a photographic film comprising a support bearing a photosensitive gelatino-silver halide emulsion is imagewise exposed and thereafter developed with a tanning developer bearing a positively or negatively charged substituent to produce a charged matrix in the gelatin, characterized in that the developed film is then processed to mordant an oppositely charged species to the charged matrix.

4,383,024

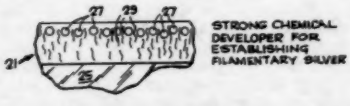
METHOD OF MAKING A HIGHLY ABSORPTIVE DYE-CONTAINING UNDERLAYER FOR LASER RECORDING AND DATA STORAGE

Eric W. Bouldin, Atherton, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Division of Ser. No. 301,230, Sep. 11, 1981, abandoned. This application Jun. 25, 1982, Ser. No. 392,194

Int. Cl.³ G03C *1/84, 1/02;* G02B *27/22*

U.S. Cl. 430—271 **6 Claims**



3. A method of making a reflective optical data storage medium comprising,

forming a layer of silver precipitating nuclei from a portion of the silver halide within a photosensitive silver-halide emulsion layer,

contacting said nucleated emulsion with a monobath comprising a silver-halide solvent and a silver-reducing agent, whereby another portion of silver halide forms soluble silver ion complexes and is transported by diffusion transfer to said precipitating nuclei, where said silver ion complexes are reduced to non-filamentary silver particles to form a reflective surface layer in said emulsion,

contacting said nucleated and monobath treated emulsion layer with a chromogenic reducing agent and a chromogenic dye coupler whereby remaining silver halide is converted into black filamentary silver particles and oxidized reducing agent formed in the reduction of said silver-halide couples with said dye coupler to form organic dye molecules in an underlayer beneath said reflective surface layer.

4,383,025

PHOTOPOLYMERIZATION BY MEANS OF SULFOXONIUM SALTS

George E. Green, Stapleford, and Edward Irving, Burwell, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,243

Claims priority, application United Kingdom, Jul. 10, 1980, 8022550; Apr. 15, 1981, 81111902

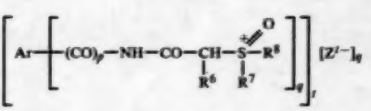
Int. Cl.³ G03C *1/68*

U.S. Cl. 430—280 **12 Claims**

1. A cationically photopolymerizable composition comprising

(a) a compound, or mixture of compounds, capable of being transformed into a higher-molecular weight material under the influence of a cationic catalyst, which is a 1,2-epoxide, a vinyl monomer or prepolymer, an aminoplast, a phenoplast, an oxetane, tetrahydrofuran or a thi-irane, and

(b) an effective amount of a carbamoylsulfoxonium salt of the formula



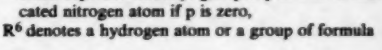
where

p is zero or 1,

q is an integer of from 1 to 4,

Ar denotes an aromatic group of valency q, having from 4 to 25 carbon atoms and being directly linked through a carbon atom thereof to the carbon atom of the indicated adjacent carbonyl group if p is 1 or to the indicated nitrogen atom if p is zero,

R^6 denotes a hydrogen atom or a group of formula



or

R^7 denotes an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 8 carbon atoms, a cycloalkylalkyl group of 4 to 10 carbon atoms, an aryl group of 4 to 24 carbon atoms, or an aralkyl group of 5 to 16 carbon atoms,

R^8 has the same meaning as R^7, but may independently represent a dialkylamino group of 2 to 6 carbon atoms or, if R^7 denotes a said alkyl group, it may independently represent an arylamino group of 4 to 8 carbon atoms,

R^9 denotes a monovalent saturated or ethylenically unsaturated radical of 1 to 12 carbon atoms, directly linked through a carbon atom thereof to the —CO— group shown in formula VII,

r is zero or 1,

R^{10} denotes a monovalent saturated or ethylenically unsaturated radical of 1 to 12 carbon atoms, directly linked through a carbon atom thereof to, if r denotes zero, the indicated nitrogen atom, or, if r denotes 1, the carbon atom of the indicated adjacent carbonyl group,

t represents 1, 2, or 3, and

Z^{t-} denotes a t-valent anion which is Cl^-, Br^-, NO_3^-, HSO_4^-, HSO_3^-, ClO_4^-, $CF_3SO_3^-$, CF_3COO^-, $C_6H_5SO_3^-$, $CH_3C_6H_4SO_3^-$, $H_2PO_4^-$, SO_4^{--}, PO_4^{---}, $SbF_5(OH)^-$, $CH_3SO_4^-$ or an anion of formula

$$MX_n^- \qquad \text{XI}$$

where
M denotes an atom of a metal or of a metalloid,
X denotes a halogen atom, and
n is 4, 5, or 6 and is one more than the valency of M.

4,383,026

ACCELERATED PARTICLE LITHOGRAPHIC PROCESSING AND ARTICLES SO PRODUCED

Thomas M. Hall, Warren and Alfred Wagner, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 44,073, May 31, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,690
Int. Cl.³ G03C 5/00
U.S. Cl. 430—325 **24 Claims**

1. Process for fabrication of an article comprising an operation during which the article undergoing fabrication comprises an article surface and an overlying actinic processing layer, said processing layer consisting essentially of radiation-sensitive material including the steps of (1) selectively exposing portions of the said processing layer to patterning actinic radiation to define a pattern whereby ease of removal of the said portions of the processing layer by a developing agent is decreased; (2) treating the said processing layer with said developing agent to selectively remove material outside the said portions to produce a now patterned processing layer; (3) treating the article undergoing fabrication with an altering agent which preferentially alters regions of the said article surface corresponding with selectively removed material in the patterned processing layer, CHARACTERIZED IN THAT the said radiation-sensitive material consists essentially of polymeric material which has a lithographic electron beam sensitivity of less than 10^{-5} coulomb/cm^2 as measured by use of incident 20 keV electrons and in which the said actinic radiation as incident on the said material consists predominantly of charged or uncharged species of atomic number at least equal to 2.

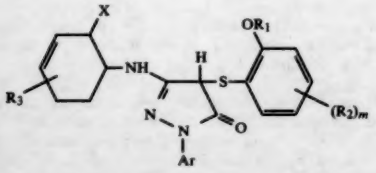
4,383,027

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND METHOD FOR DEVELOPING THEREOF

Takatoshi Ishikawa; Masakazu Morigaki; Takashi Nakamura, and Nobuo Furutate, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

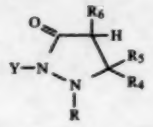
Filed Jun. 23, 1982, Ser. No. 391,331
Claims priority, application Japan, Jun. 23, 1981, 56-97255
Int. Cl.³ G03C 1/40
U.S. Cl. 430—372 **22 Claims**

20. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing at least one coupler represented by the following general formula (I):



(I)

wherein R_1 represents an alkyl group or an aryl group; R_2 represent a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, an alkoxy group or an aryl group; R_3 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an acylamino group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, a diacylamino group, an alkoxycarbonyl group, an alkoxysulfonyl group, an aryloxysulfonyl group, an alkanesulfonyl group, an arylsulfonyl group, an alkylthio group, an arylthio group, an alkyloxycarbonylamino group, an alkylureido group, an acyl group, a nitro group, a carboxy group, or a trichloromethyl group; X represents a halogen atom or an alkoxy group; Ar represents a substituted phenyl group; m is an integer of from 1 to 4; and the above described organic groups may be substituted; and the silver halide emulsion layer and/or a hydrophilic colloid layer adjacent thereto containing a 1-phenyl-3-pyrazolidone derivative represented by the following general formula (II):



wherein Y represents a hydrogen atom or an acyl group; R and R_4, which may be the same or different, each represents an aryl group; R_5 represents a hydrogen atom or an alkyl group; R_6 represents a hydrogen atom, an alkyl group or an aryl group; and the above described organic groups may be substituted.

4,383,028

PHOTOGRAPHIC CHEMISTRY

Byron R. Boots, Hayward, Calif., assignor to Lorin W. Boots, Red Bluff, Calif.

Filed Aug. 3, 1981, Ser. No. 289,561
Int. Cl.³ G03C 5/30
U.S. Cl. 430—483 **33 Claims**

1. A photographic chemistry comprising: a number of alkalies in a pH range from about 8 to 14; a developer in solution with said alkalies; a solvent mixed with the alkalies and the developer; a modified alkanolamide comprising cocamide and diethanolamine in solution with the alkalies, the developer and the solvent; and a hydrotrope mixed with the modified alkanolamide.

4,383,029

RECORDING MEDIUM AND RECORDING SYSTEM

Noboru Yamada; Mutsuo Takenaga, both of Katano, and Kenichi Nishiuchi, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 179,081, Aug. 18, 1980, abandoned. This application May 27, 1982, Ser. No. 383,326
Claims priority, application Japan, Aug. 16, 1979, 54-104574
Int. Cl.³ G03C 1/00
U.S. Cl. 430—541 **12 Claims**

1. A recording medium adapted to be irradiated with high-density pulsed light in response to a recording signal, for recording a visible image, comprising a support, a recording layer formed on said support, said recording layer containing at least a metastable substance composed of an intermediate product of the reaction of a first colorless or light-colored material containing sulfur atoms and a second colorless or light-colored material which develops color upon being sulfurized, the sulfur atoms in said first material being released by high-density pulsed light irradiation and said second material being sulfurized by said released sulfur atoms, said first material being selected from the group consisting of Sb_2S_3, In_2S_3, ZnS, GeS, GeS_2, SnS, SnS_2, Ag_2S, and Bi_2S_3, said second material being selected from the group consisting of SnO, TeO_2, Pb_3O_4, Bi_2O_3, In_2O_3, Tl_2O_3, Sb_2O_3, MoO_3 and Ag_2O, said first and second materials being reacted such that the

reaction advances partly to form said metastable substance, whereby when said metastable substance in said recording layer is irradiated with the high-density pulsed light corresponding to a recording signal, sulfur atoms are dissociated from said first material in the irradiated part of the recording layer, and said dissociated sulfur atoms react with said second material to produce a colored sulfide to record the recording signal as a visible image directly on the recording medium in response to the high-density pulsed light irradiation.

4,383,030

LOW COATING WEIGHT SILVER HALIDE ELEMENT USING MIX SENSITIZATION TECHNIQUES

Allan R. Schoenberg, Asheville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 27, 1981, Ser. No. 257,972
Int. Cl.³ G03C *1/28*
U.S. Cl. 430—599 **8 Claims**

1. A process for preparing a photosensitive gelatino-silver halide emulsion, characterized in that glutaraldehyde (GDA) bisulfite or substituted GDA-bisulfite are added thereto in concentrations of 0.016–1.6% by weight based on the weight of the silver halide, in combination with an aromatic sulfinic acid or a water-soluble salt thereof, at the silver halide precipitation stage.

4,383,031

HOMOGENEOUS CHEMILUMINESCENT SPECIFIC BINDING ASSAY

Robert C. Boguslaski, Elkhart, and Robert J. Carrico, Bremen, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 894,836, Apr. 10, 1978, which is a continuation of Ser. No. 667,996, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Jun. 21, 1979, Ser. No. 50,620
Int. Cl.³ G01N *33/54, 33/58, 21/76*
U.S. Cl. 435—7 **46 Claims**

1. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

(1) forming a reaction mixture by combining said liquid medium (a) with a conjugate comprising said ligand, or a specific binding analog or binding partner thereof, labeled with a substance which is a reactant in a chemiluminescent reaction, and (b) if said conjugate comprises said ligand or analog thereof, also with a specific binding partner of said ligand, the ability of the chemiluminescent label to participate in said chemiluminescent reaction being changed when said conjugate is bound,

(2) forming said chemiluminescent reaction in at least a portion of said reaction mixture, and

(3) comparing the light produced with that produced following the same procedure using a liquid medium containing a known amount of said ligand.

37. Reagent means for use in a homogeneous specific binding assay for determining a ligand in a liquid medium, comprising (a) a conjugate comprising said ligand or an analog thereof labeled with a substance which is a reactant in a chemiluminescent reaction, and (b) a specific binding partner of said ligand, the ability of the chemiluminescent label to participate in said chemiluminescent reaction being changed when said conjugate is bound by said binding partner.

4,383,032

REAGENT FOR THE DETERMINATION OF β-LACTAMASE

Peter Stahl, Bernried; Wolfgang Vömel, Mannheim, and Hans Seidel, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,267
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019451
Int. Cl.³ C12Q *1/04, 1/06, 1/30, 1/38*
U.S. Cl. 435—23 **20 Claims**

1. Method for the determination of beta-lactamases comprising contacting the sample to be determined with 7-cyanoacetylaminocephalosporanic acid in an amount to form a quantitative color reaction and, in amounts effective to accelerate the color reaction, a synergistic mixture of ammonium ions and at least one member of the group consisting of phosphate ions and oxygen-splitting agents; and measuring the colored material formed as a measure of the beta-lactamases present.

4,383,033

RADIOIODINE LABELING DURING PROTEIN SYNTHESIS

Neal H. Scherberg, Chicago, Ill., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 21,103, Mar. 16, 1979, Pat. No. 4,260,737. This application Nov. 17, 1980, Ser. No. 207,516
Int. Cl.³ C12P *21/00, 21/02*; C12N *1/00*
U.S. Cl. 435—68 **3 Claims**

1. A process for the broken-cell synthesis of protein containing radioiodo-tyrosine comprising the steps of:

(a) forming a mixture comprising broken-cell lysate, messenger RNA, and radioiodo-tyrosyl-tRNA in a buffered solution;

(b) incubating the mixture at a temperature and for a time sufficient to effect protein synthesis; and

(c) terminating the synthesis by addition of RNase.

4,383,034

PROCESS FOR THE PRODUCTION OF HUMAN FOLLICLE-STIMULATING HORMONE

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Aug. 7, 1981, Ser. No. 290,861
Claims priority, application Japan, Aug. 27, 1980, 55-116942
Int. Cl.³ C12P *21/02, 21/04, 21/00*
U.S. Cl. 435—70 **10 Claims**

1. A process for producing human follicle-stimulating hormone (hFSH) which comprises:

(1) implanting human cells capable of producing hFSH into a non-human warm-blooded animal;

feeding the animal to cause the human cells therein to multiply;

extracting and disaggregating the resultant multiplied human cells formed in the animal;

culturing the human cells in a nutrient medium in the presence of a follicle-stimulating hormone inducer for a period sufficient to accumulate a significant amount of hFSH; and

harvesting the accumulated hFSH from the culture, or alternatively,

(2) placing human cells capable of producing hFSH in suspension in a diffusion chamber;

embedding the chamber in or placing the chamber, on a non-human warm-blooded animal in a manner such that the nutrient body fluid of the non-human warm-blooded animal is supplied to the cells within the chamber;

feeding the animal to cause the human cells in the chamber to multiply;

collecting the multiplied human cells from the chamber;
culturing the human cells in a nutrient medium in the presence of a follicle stimulating hormone inducer for a period sufficient to accumulate a significant amount of hFSH; and
harvesting the accumulated hFSH from the culture.

4,383,035
PROCESS FOR THE PRODUCTION OF HUMAN LUTEINIZING HORMONE

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Aug. 7, 1981, Ser. No. 290,862
Claims priority, application Japan, Aug. 27, 1980, 55-116943
Int. Cl.³ C12P *21/02, 21/04, 21/00*
U.S. Cl. 435—70 **9 Claims**

1. A process for producing human luteinizing hormone (hLH), which comprises:
(1) implanting human cells capable of producing hLH into a non-human warm-blooded animal;
feeding the animal to cause the human cells therein to multiply;
extracting and disaggregating the resultant multiplied human cells formed in the animal;
culturing the human cells in a nutrient medium in the presence of a luteinizing hormone inducer for a period sufficient to accumulate a significant amount of hLH; and
harvesting the accumulated hLH from the culture, or alternatively,
(2) placing human cells capable of producing hLH in suspension in a diffusion chamber;
embedding the chamber in or placing the chamber on a non-human warm-blooded animal in a manner such that the nutrient body fluid of the non-human warm-blooded animal is supplied to the cells within the chamber;
feeding the animal to cause the human cells in the chamber to multiply;
collecting the multiplied human cells from the chamber;
culturing the human cells in a nutrient medium in the presence of a luteinizing hormone inducer for a period sufficient to accumulate a significant amount of hLH; and
harvesting the accumulated hLH from the culture.

4,383,036
PROCESS FOR THE PRODUCTION OF HUMAN CHORIONIC GONADOTROPIN

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Aug. 7, 1981, Ser. No. 290,863
Claims priority, application Japan, Aug. 23, 1980, 55-116140
Int. Cl.³ C12P *21/02, 21/04, 21/00*
U.S. Cl. 435—70 **11 Claims**

1. A process for producing human chorionic gonadotropin (hCG), which comprises:
(1) implanting human lymphoblastoid cells capable of producing hCG into a non-human warm-blooded animal;
feeding the animal to cause the human cells therein to multiply;
extracting and disaggregating the resultant multiplied human cells formed in the animal;
culturing the human cells in a nutrient medium for a period sufficient to accumulate a significant amount of hCG; and
harvesting the accumulated hCG from the culture, or alternatively,
(2) placing human lymphoblastoid cells capable of producing hCG in suspension in a diffusion chamber;
embedding the chamber in or placing the chamber on a non-human warm-blooded animal in a manner such that the nutrient body fluid of the non-human warm-blooded animal is supplied to the cells within the chamber;
feeding the animal to cause the human cells in the chamber to multiply;
collecting the multiplied human cells from the chamber;
culturing the human cells in a nutrient medium for a period sufficient to accumulate a significant amount of hCG; and
harvesting the accumulated hCG from the culture.

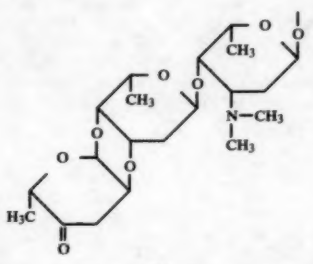
4,383,037
PROCESS TO PRODUCE ANTHRACYCLINE GLYCOSIDES

Akiko Fujiwara; Tatsuo Hoshino, both of Kamakura, and Yuzuru Sekine, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 19, 1981, Ser. No. 313,066
Claims priority, application United Kingdom, Oct. 27, 1980, 8034536
Int. Cl.³ C12P *19/56;* **C12R** *1/465*
U.S. Cl. 435—78 **7 Claims**

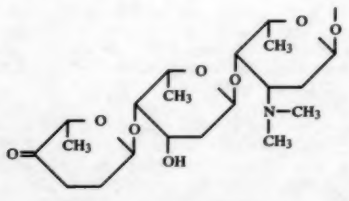
1. A process for producing anthracycline glycosides A which comprises converting the sugar moiety of anthracycline glycosides B of the formula:

B



into the sugar moiety of anthracycline glycosides of the formula:

A



by fermentative reaction with a microorganism of the species *Streptomyces galilaeus* or *Streptomyces melanogenes.*

4,383,038
PROCESS FOR THE PREPARATION OF L-PROLINE BY CULTIVATING ALGAE

Richard I. Leavitt, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 10, 1981, Ser. No. 329,226
Int. Cl.³ C12P *13/24;* **C12R** *1/89*
U.S. Cl. 435—107 **18 Claims**

1. A process for the production of L-proline, which comprises cultivating Chlorella sp. 580 algae under high-intensity illumination in an aqueous growth medium containing an amount sufficient of nutrients including nitrogen to effect growth of the algae and a high concentration of sodium chloride which reaches at least 1 M in the final stage of cultivation under an aerobic condition, providing an adequate supply of carbon, in a depth not exceeding approximately 20 cm of the

aqueous medium, until algae of high L-proline content are obtained, harvesting the algae and recovering from same the L-proline thus produced.

4,383,039

L-PROLINE PRODUCTION FROM ALGAE

Richard I. Leavitt, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 10, 1981, Ser. No. 329,227

Int. Cl.³ C12P *13/24*; C12R *1/89*

U.S. Cl. 435—107 **20 Claims**

1. A process for the recovery of L-proline from Chlorella sp. 580 algae without disrupting or destroying the L-proline synthesizing capability of the algae which comprises cultivating Chlorella sp. 580 algae under high-intensity illumination in an aqueous growth medium containing an amount sufficient of nutrients including nitrogen to effect growth of the algae and a high concentration of sodium chloride which reaches at least 1 M in the final stage of cultivation under an aerobic condition, providing an adequate supply of carbon in a depth not exceeding approximately 20 cm of the growth medium, until algae of high L-proline content are obtained, harvesting the algae and thereafter recovering L-proline from the algae without disrupting the capability of the algae to resynthesize L-proline by diluting the harvested algae with water to a concentration below at least 0.3 M sodium chloride to effect release of L-proline from the algae into the aqueous phase, removing the algae from the L-proline containing aqueous phase and reintroducing the algae into a high salt concentration containing medium of up to at least 1 M NaCl to restimulate L-proline production within the algae.

4,383,040

FERMENTATION PROCESS AND APPARATUS

Richard Fricker, Derby, England, assignor to A.G. (Patents) Limited, London, England

Filed May 29, 1980, Ser. No. 154,499

Claims priority, application United Kingdom, Jul. 16, 1979, 7924754; Mar. 12, 1980, 8008409

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 **9 Claims**

1. A method of continuous fermentation comprising:

(1) continuously feeding a carbohydrate solution into a fermentation zone containing substantially homogeneously distributed yeast and carbohydrate solution whereby the carbohydrate is fermented to ethanol,

(2) continuously passing a proportion of the fermenting liquid from the fermentation zone to a pressurized settling tank, wherein the pressure within the settling tank is sufficient to prevent the formation of any gaseous carbon dioxide,

(3) withdrawing yeast depleted liquid from the upper part of the settling tank and yeast enriched liquid from the lower part of said tank, and

(4) returning the proportion of the yeast enriched liquid withdrawn from the lower part of the settling tank to the fermentation zone, said proportion being such that the quantity of yeast in the fermentation zone is maintained substantially constant at a desired concentration.

4,383,041

AUTOMATIC ENZYME IMMUNOASSAY APPARATUS

Tadashi Kutsusawa, Koganei; Hideo Shirane, Tokyo; Mikiharu Fujihara, and Hideho Hisada, both of Hachioji, all of Japan, assignors to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,682

Claims priority, application Japan, Oct. 28, 1980, 55-150152

Int. Cl.³ G01N *33/54, 33/58, 35/02, 35/06*

U.S. Cl. 435—291 **1 Claim**

1. An automatic enzyme immunoassay apparatus comprising:

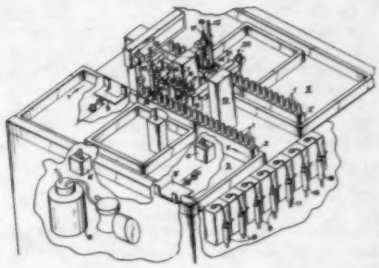
means for moving a rack holding test tubes containing beads therein, in a lengthwise direction, said rack being held in a cage;

means for moving said rack in a direction transverse to said lengthwise direction;

means for inserting both a suction nozzle and a cleaning liquid injection nozzle into any of or into a plurality of said test tubes to inject cleaning liquid into said test tube after withdrawing liquid by suction from said test tube and discarding the withdrawn liquid;

means for inserting a reaction liquid injection nozzle into said test tube and injecting a reaction liquid into said test tube;

means for vibrating said test tube;



means for inserting an attraction nozzle into said test tube and pulling said bead out of said test tube, while attracting said bead thereto, and letting said bead fall into a second test tube;

means for inserting a substrate injection nozzle and a reaction termination liquid injection nozzle, and injecting a reaction termination liquid into said second test tube after injecting a substrate;

means for inserting a nozzle associated with a measuring device into said second test tube and transporting the liquid in said test tube to a measurement device;

a spectrophotometer for measuring the absorbance of said liquid; and

a printer for recording the measured value of the absorbance.

4,383,042

PROCESS FOR DETECTING SOFT SPOTS IN ALUMINUM

Dolphus L. Coggins, St. Louis; Eugene R. Fannin, and John Gumbelevicius, both of St. Louis County, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jul. 16, 1981, Ser. No. 284,004

Int. Cl.³ G01N *33/20, 19/08*

U.S. Cl. 436—5 **11 Claims**

1. The method of detecting whether an article consisting principally of aluminum has been degraded by improper processing so that it contains regions which are of lowered hardness and mechanical properties than surrounding regions of desired hardness, which comprises the steps of:

(a) cleaning the surface of an article consisting principally of aluminum;

(b) applying to the cleaned surface a film forming solution which contains (1) an agent which attacks the aluminum to dissolve aluminum oxide from said surface and which is selected from the group consisting of acids and bases and (2) an inorganic oxidizing agent which forms said film, said oxidizing agent having a composition different from said agent which attacks the aluminum;

(c) rinsing the surface with water after the solution of step (b) has been in contact with the surface for a time sufficient to form said film on said surface;

(d) drying the article; and

(e) examining said surface visually to determine the presence of local variations in color of said film which identify any of said regions which are of lowered hardness and mechanical properties.

4,383,043

MAGNESIUM ASSAY WITH CALMAGITE OR ERIOCHROME BLACK T REAGENTS

Jerry W. Denney, Carmel, and Robert L. Long, Indianapolis, both of Ind., assignors to American Monitor Corporation, Indianapolis, Ind.

Filed Jul. 13, 1981, Ser. No. 282,721

Int. Cl.³ G01N *33/52*

U.S. Cl. 436—74 **38 Claims**

1. A reagent for the determination of magnesium, comprising Calmagite and a strong buffer such that the pH of said reagent is greater than about 9.0 and the relative Van Slyke buffer value β' of said reagent is greater than 1.

15. A reagent for the determination of magnesium, comprising Eriochrome Black T and a strong buffer such that the pH of said reagent is greater than about 9.0 and the relative Van Slyke buffer value β' of said reagent is greater than 1.

4,383,044

SLAKING-RESISTANT CALCIA REFRACTORY

Hiroshi Nagayama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,181

Claims priority, application Japan, Oct. 14, 1980, 55-142379; Mar. 13, 1981, 56-35196

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—108 **20 Claims**

1. A slaking-resistant calcia refractory consisting essentially of as a fired mixture, (a) 2% by weight or less of silicon dioxide, (b) aluminum oxide (Al_2O_3) and magnesium oxide (MgO) of the amount defined in the graph of FIG. 5 as within the region enclosed by the lines connecting point A (2.5 wt.% Al_2O_3 and 0 wt.% MgO), point B (1.5 wt.% Al_2O_3 and 1.5 wt.% MgO), point C (1.5 wt.% Al_2O_3 and 8.5 wt.% MgO) and point D (10 wt.% Al_2O_3 and 0 wt.% MgO), (c) 0.9% by weight or less of iron oxide, and (d) as predominant amount of calcium oxide.

4,383,045

MAGNESIA REFRACTORIES BONDED WITH SULFAMIC ACID

Dennis C. Nagle, Catonsville, Md.; Myron T. McCall, Charlotte, N.C., and In H. Kim, Sykesville, Md., assignors to Martin Marietta Corp., Bethesda, Md.

Filed Apr. 27, 1982, Ser. No. 372,413

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—109 **14 Claims**

1. A refractory composition comprising a dry granular mixture of a magnesia-based refractory grain and up to about 10% by weight of sulfamic acid as a binder.

4,383,046

REGENERATION OF ION EXCHANGE MATERIALS

James R. Emmett, Brewood, England, assignor to Northern Engineering Industries Ltd., Newcastle upon Tyne, England

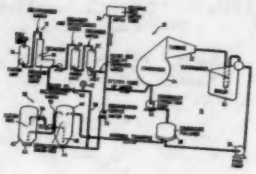
Filed Feb. 22, 1982, Ser. No. 350,561

Claims priority, application United Kingdom, Mar. 5, 1981, 8106965

Int. Cl.³ B01J *49/00*

U.S. Cl. 521—26 **8 Claims**

1. In a method of regenerating mixed ion exchange materials in which after classification in a vessel material is transferred from the vessel by flow of transfer water and a parameter dependent on the ion concentration of the transfer water is monitored the improvement comprising increasing the ion concentration of the water used for transfer flow so that detection of the change of ion exchange material type being transferred in successive cycles of regeneration is repeatable independently of prejudicial effects arising from spurious uncontrolled source changes in the water.



4,383,047

HIGH PERFORMANCE ANION-EXCHANGE CHROMATOGRAPHIC PACKING COMPOSITION

Timothy S. Stevens, and Martin A. Langhorst, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 17, 1981, Ser. No. 234,521

Int. Cl.³ B01J *41/06*

U.S. Cl. 521—28 **44 Claims**

1. An improved pellicular type (agglomerated) anion-exchange chromatographic packing composition which comprises:

Component A, a substrate which consists essentially of particles of insoluble synthetic resin, having cation-exchanging sites at least on their available surfaces, the Component A particles being of a diameter of between about 5 to 75 microns and of low porosity relative to Component B microparticles, described below, and

Component B, which consists essentially of microparticles of insoluble synthetic resin, having a volume average diameter of less than about 900 and greater than about 50 Angstroms, the microparticles having anion-exchanging sites, at least on their outer surfaces, which attract available cation sites of Component A, wherein the microparticles of Component B are attached as a monolayer to the available surfaces of the Component A particles.

4,383,048

PROCESS FOR MAKING LOW DENSITY CHLORINATED POLYVINYL CHLORIDE FOAM

Dale R. Hall, Avon Lake, and Charles N. Bush, Bay Village, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 28, 1982, Ser. No. 425,838

Int. Cl.³ C08J *9/06, 9/14*

U.S. Cl. 521—85 **8 Claims**

1. The process for making a low density chlorinated polyvinyl chloride polymer foam said polymer having a chlorine content of from 60% to 73% by weight having an essentially closed-cell cellular structure comprised predominantly of cells having a cell size of less than 500 microns, said process comprising:

(a) dispersing a nucleating system comprised of an alkali metal borohydride and a proton donor activator compatible with said polymer selected from the group consisting of hydrated salts and organic acids within a chlorinated polyvinyl chloride polymer composition,

(b) forming cell nuclei of hydrogen gas within said chlorinated polyvinyl chloride polymer composition by heating said nucleating system to cause said proton donor activa-

tor to produce protons which react with said alkali metal borohydride to form hydrogen gas, and

(c) expanding said chlorinated polyvinyl chloride polymer composition into said foam product utilizing a primary blowing agent, said nucleating system being activated to form said cell nuclei at a temperature above 25° C. but below the highest processing temperature which the CPVC polymer composition experiences before the CPVC polymer composition expands.

4,383,049

PROCESS FOR THE PRODUCTION OF POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed Jun. 12, 1982, Ser. No. 397,146

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—135 **9 Claims**

1. The process for the production of foamed polyester silicate resinous products containing an oxidated silicon compound by mixing and reacting the following components;

(a) an oxidated silicon compound, 1 to 50 parts by weight;

(b) an organic epoxide compound, 10 to 50 parts by weight;

(c) an organic polycarboxyl compound selected from the groups consisting of polycarboxylic acid, polycarboxylic acid anhydride and mixtures thereof, 10 to 50 parts by weight;

thereby producing polyester silicate resinous product then 1 to 100 parts by weight of the polyester silicate resinous product are mixed with 50 parts by weight of a polyisocyanate, up to 50% by weight of a chemically-inert blowing agent, up to 20% by weight of a foam stabilizer, up to 10% by weight of a polyisocyanate activator, up to 50% by weight of a curing agent and up to 5% by weight of an emulsifier, percentage based on the weight of the reactants, and allowed to react, thereby producing a foamed polyurethane silicate resinous product.

4,383,050

PROCESS FOR THE PREPARATION OF LOW TEMPERATURE FLEXIBLE POLYURETHANE ELASTOMERS

Dietmar Nissen, Heidelberg; Hans U. Schmidt, Ludwigshafen; Wolfgang Straehle, Heidelberg; Uwe Schuett, Olching, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,754

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042558

Int. Cl.³ C08G *18/14, 18/36, 18/48*

U.S. Cl. 521—174 **18 Claims**

1. A process for the preparation of low temperature flexible polyurethane elastomers by reacting organic polyisocyanates, polyols, alkoxylated fatty acid esters and/or alkoxylated terpene alcohols in the presence of catalysts and optionally chain extenders, blowing agents, stabilizers, pigments, surface active agents and flame retardants wherein said polyols are selected from the group consisting of polyester polyols having a hydroxyl number of 40 to 120 and a glass transition temperature range of −10° C. to −80° C. and polytetrafuran polyols having a hydroxyl number of 20 to 250.

4,383,051

PROCESS FOR THE PREPARATION OF POLYURETHANE PLASTICS USING DIANHYDRO-HEXITE DIOLS

Holger Meyborg, Odenthal; Kuno Wagner, Leverkusen; James M. Barnes, Wermelskirchen, and Herbert Salzburg, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,118

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111093

Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—176 **9 Claims**

1. A process for the preparation of polyurethane plastics comprising reacting

(a) organic polyisocyanates;

(b) compounds containing at least 2 Zerewitinoff-active hydrogen atoms and having molecular weights of from 400 to 10,000; and

(c) chain extenders, characterized in that 1,4-3,6-dianhydrohexites are used as the chain extenders.

4,383,052

1-METHACRYLOXYETHANE-1,1-DIPHOSPHONIC ACID AND ITS SALTS AND DENTAL ADHESIVE COMPOSITION CONTAINING SAME

Moriaki Higo; Yasuo Kikuchi, both of Ninomiya; Shinya Kitoh, Hiratsuka; Shin-ichi Suzuki, and Haruhiko Toda, both of Odawara, all of Japan, assignors to Lion Corporation, Tokyo, Japan

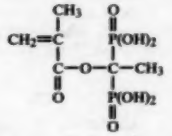
Filed Dec. 14, 1981, Ser. No. 330,604

Claims priority, application Japan, Dec. 20, 1980, 55-181063

Int. Cl.³ C08K *5/10, 5/50*

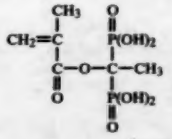
U.S. Cl. 523—118 **9 Claims**

1. 1-Methacryloxyethane-1,1-diphosphonic acid having the formula (1) and its salts.



(1)

2. A dental adhesive composition comprising at least one compound selected from the group consisting of 1-methacryloxyethane-1,1-diphosphonic acid having the formula (1) and its salts.



(1)

4,383,053

ANTIFOULING PAINTS HAVING FUMARIC ACID ESTER POLYMER

Yoshihiro Honda, Nishinomiya, Japan, assignor to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00215, § 371 Date May 7, 1980, § 102(e) Date Apr. 28, 1980, PCT Pub. No. WO80/00571, PCT Pub. Date Apr. 3, 1980

PCT Filed Aug. 15, 1979, Ser. No. 199,931

Claims priority, application Japan, Sep. 7, 1978, 53-109108

Int. Cl.³ C09D 5/16; C08F 22/10, 122/10, 222/10

U.S. Cl. 523—122 8 Claims

1. Antifouling paints containing as a vehicle polymers having a weight average molecular weight of 1,000–100,000 obtained by polymerizing at least one of the unsaturated acid ester monomers shown by the general formula

$$R_1OOC—CX=CY—COOR_2$$

wherein R_1 and R_2 are alkyl groups having 1–4 carbon atoms, and X and Y are hydrogen, alkyl groups having 1 or 2 carbon atoms, or halogen, or by copolymerizing a major amount of the unsaturated acid ester monomers having the said formula with ethylenically unsaturated monomers free of free carboxyl and hydroxyl groups.

4,383,054

HYDROPHILIC HIGH POLYMERS PREPARED FROM AQUEOUS SOLUTIONS OR DISPERSIONS OF POLYOXYPROPYLENE POLYAMINE N-N'-POLYMETHYLENE SULFONATES

Heinz Schulze, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 28, 1981, Ser. No. 268,038

Int. Cl.³ C08L 63/02

U.S. Cl. 523—131 12 Claims

5. An aqueous solution for injection into a subterranean formation to decrease the permeability of such formation, comprising:

an aqueous solution containing a N-polymethylene sulfonate substituted polyoxyalkylene polyamine of the formula

$$[NaO_3S—R_1]_mA$$

wherein R_1 is a polymethylene group or a hydroxy substituted polymethylene group having from 2 to 6 carbon atoms, m is from 2 to 4 and A is a polyoxyalkylene polyamine;

and an epoxy-resin; wherein

the aqueous solution contains from about 50 to about 70% by weight water, from about 25 to about 35% by weight N-polymethylene sulfonate substituted polyoxyalkylene polyamine, and from about 3 to about 9% by weight epoxy-resin.

4,383,055

PROCESS FOR PREPARING HEAT-CURABLE, WATER-DILUTABLE COATING COMPOSITIONS AND THEIR USE AS COATINGS

Gerhard Johannes, Taunusstein; Helmut Dürr, Frankfurt am Main; Dieter Plath; Diedrich Schneider, both of Wiesbaden, and Klaus Esser, Heinrichsthal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,505

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038243

Int. Cl.³ C08L 63/02

U.S. Cl. 523—221 11 Claims

1. In a process for preparing heat-curable, water-dilutable coating compositions based on

(A) 1–90% by weight of at least one epoxy resin which is solid at ambient temperature and free from amino groups,

(B) 10–90% by weight of at least one synthetic resin having functional groups, which is in the form of a solution or dispersion with a solids content of 10 to 70% by weight,

(C) 0.05–40% by weight of at least one organic cross-linking agent which is solid or liquid at ambient temperature and

(D) 0–75% by weight of at least one component selected from the group consisting of pigments and conventional adjuvants,

in which the sum of components (A) to (D) is always 100% by weight and the percentages are referred to the substances free from solvents and water, and the components (A) to (D) are conjointly processed together in at least one stage while reducing the original particle size so far to form a homogeneous coating composition having a particle size of less than 100 μm and wherein there is, or is not, subsequently water added to adjust the solids content to that required for application, the improvement which consists in using as component (B) an aqueous dispersion or solution of saturated polyester resins having carboxyl groups and consisting of carbon, hydrogen and oxygen, or of modification products obtained therefrom by ester oils, the said polyester resin being at least partially neutralized with amines and having an acid number in the range from 30 to 120 and an OH number of 10 to 150 and the sum of acid number and hydroxy number being at least as high that the polyester resin which is at least partially neutralized forms a stable aqueous dispersion or solution.

4,383,056

METHOD OF CONVERTING RESIN SOLUTION TO AQUEOUS DISPERSION

Alvin W. Baker; Robert DeVellis, both of Antioch; Patrick H. Martin, Danville, and Robin A. Withers, Walnut Creek, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1981, Ser. No. 329,379

Int. Cl.³ C08L 63/02

U.S. Cl. 523—328 14 Claims

1. The method of converting a solution of a water-dispersible, salified phosphoester resin to an aqueous dispersion of said resin which comprises steam-stripping said solution with vigorous agitation and under conditions such that at least a portion of the water required for the desired final solids content is provided by steam condensation.

4,383,057

PROCESS OF PREPARING COATING COMPOSITIONS COMPRISING POLYVINYL BUTYRAL AND COLLOIDAL SILICA

Tamechika Yamamoto, Zushi; Sumio Saitoh, Yokohama; Hikoji Yoshimura, Yokohama, and Masaru Yoshimura, Yokohama, all of Japan, assignors to Catalysts & Chemicals Ind. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 147,673, May 7, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,729

Claims priority, application Japan, May 15, 1979, 54-59396

Int. Cl.³ C08K 3/36, 5/05

U.S. Cl. 523—333 1 Claim

1. A process for preparing a coating composition comprising a mixture of (1) an organic solvent solution of polyvinyl butyral resin, and (2) a dispersion, in alcohol, of substantially spherical colloidal silica particles having a mean particle diameter in the range of from about 5 to about 100 mμ, the solids of said composition consisting essentially of from 20 to 95% by weight of said polyvinyl butyral resin and correspondingly from 80 to 5% by weight of said substantially spherical colloidal silica particles, which comprises the steps of: preparing an aqueous dispersion of substantially pure, substantially spherical, colloidal silica particles which are of regular diameter in the range of 5 to 100 mμ and which have a high density and a reduced specific surface area by neutralizing and hydrolyzing a dilute

aqueous solution of an alkali silicate with an acid, under alkaline conditions, to produce fine colloidal silica particles, then concentrating the solution under alkaline conditions effective to cause the fine colloidal silica particles to grow to form said substantially pure, substantially spherical, colloidal silica particles which have regular diameters in the range of 5 to 10 mμ and which are substantially free of alkali metal ions, hydroxyl groups and water within the particles, and then controlling the pH of the solution to prevent gelation of said substantially spherical colloidal silica particles; then adding a lower alkanol to said aqueous dispersion and removing the water from said aqueous dispersion to obtain an alkanol dispersion consisting essentially of said lower alkanol and from 5 to 30 wt.% of said substantially pure, substantially spherical, colloidal silica particles, and then mixing said alkanol dispersion with an organic solvent solution consisting essentially of an organic solvent which is compatible with said alkanol and from 10 to 20 wt.% of polyvinyl butyral resin.

4,383,058

EPOXY-AMINE COPOLYMER REACTION PRODUCT AND AQUEOUS COATING COMPOSITIONS THEREOF

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,649
Int. Cl.³ C08L 63/00
U.S. Cl. 523—411 **6 Claims**

1. A non-gelled composition comprising an adduct containing amino groups and substantially free of oxirane groups, which adduct is the reaction product of

(a) an amine containing copolymer comprising a solution copolymer of alpha, beta-monoethylenically unsaturated monomers containing at least 10 weight percent of alpha, beta-monoethylenically unsaturated monomer containing primary or secondary amino groups based on the total weight of the monomers; and

(b) an epoxy resin containing free oxirane groups which consists of a bisphenol A-epichlorohydrin epoxy having an epoxy equivalent weight of between 200 and 4000.

4,383,059

WATER DILUTABLE EPOXY COATING COMPOSITIONS

Basil W. Brook, Coventry, and Frank Reeder, Whitburn, both of England, assignors to The International Paint Company Limited, London, England

Filed Sep. 23, 1981, Ser. No. 304,645
Claims priority, application United Kingdom, Oct. 6, 1980, 8032084
Int. Cl.³ C08L 63/02
U.S. Cl. 523—412 **15 Claims**

1. A coating composition comprising a water-dilutable dispersion of (a) the reaction product of an epoxy resin having an epoxy molar mass of about 1,000 to about 8,000 with a non-tertiary amine in an amount sufficient to provide from about 40 to 100 percent equivalents of amine based on epoxide groups in said epoxy resin, and (b) a polymer containing free carboxyl groups present in an amount sufficient to provide free carboxyl groups in a ratio of about 1.5:1 to about 20:1 based on sum of the amine groups and unreacted epoxy groups in the epoxy resin reaction product (a), said epoxy resin reaction product (a) providing at least about 40 percent, by weight, of the resin solids in the coating composition.

4,383,060

EPOXY ADHESIVE FOR STRUCTURALLY BONDING MOLDED SMC

Thomas J. Dearlove, Troy, and Richard K. Gray, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1982, Ser. No. 383,469
Int. Cl.³ C08L 63/04
U.S. Cl. 523—429 **3 Claims**

1. A heat curable viscous adhesive composition for bonding molded articles of sheet molding compound to each other, said adhesive being resistant to degradation by environmental exposure and comprising in parts by weight

100 parts cross-linkable epoxy novolac resin having an epoxide equivalent weight in the range of from about 150 to 200 and a viscosity at 50° C. in the range of from about 1,000 to 2,000 centipoise;

from about 10 to 20 parts of an epoxy flexibilizer consisting essentially of an adduct of diglycidyl ether of bisphenol-A and an alkyl ester of a fatty acid;

from about 100 to 150 parts natural silica having an average particle size in the range of from about 2 to 100 microns;

from about 2 to 8 parts thixotropic colloidal silica; and

an amount of imidazole curing agent substituted in the 1-position with a hydroxyalkyl group sufficient to achieve a bond strength between molded articles of sheet molding compound bonded to each other with an interlayer of said adhesive composition of at least 6,000 Joules per square meter after heating the composition in situ for three minutes at 150° C.;

wherein said adhesive substantially retains said bond strength at temperatures between about minus 78° C. and plus 200° C.

4,383,061

EPOXY SMOOTHING COMPOUND

Jesse R. Neal, Jr., Panama City, Fla.; Henry R. Bleile, Bowie, Md., and Truman W. Humphries, Napa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,453
Int. Cl.³ C08L 63/02
U.S. Cl. 523—458 **2 Claims**

1. A coating composition for smoothing rough surfaces of steel, masonry, and concrete having desirable application and curing characteristics, said coating composition being prepared by mixing:

(a) 44–45% by weight of a first component, said first component being a dispersion consisting of a polyamide adduct resin of 48–54% by weight, a polyamide resin of 3–4% by weight, a thixotrope additive of 12–24% by weight, a titanium dioxide pigment of 5–6% by weight, and a magnesium silicate pigment of 34–38% by weight; and

(b) 44–45% by weight of a second component, said second component being a dispersion consisting of an epoxy resin of 55–66% by weight, a thixotrope additive of 10–20% by weight, a colorant pigment of 2–4% by weight, and a magnesium silicate pigment of 31–35% by weight.

4,383,062

WATERBORNE COATING COMPOSITIONS

William T. Saad, Burnt Hills, and Robert F. Stodgell, Schaghticoke, both of N.Y., assignors to General Electric, Waterford, N.Y.

Filed Jan. 28, 1981, Ser. No. 229,226
Int. Cl.³ C08L 1/00, 1/26
U.S. Cl. 524—35 **21 Claims**

1. A waterborne silicone coating composition comprising:

(a) 50 to 70 parts by weight of a silicone resin-water emulsion comprised of 100 parts by weight of (i) at least one organopolysiloxane resin composition comprising units selected from the group consisting of $R_3SiO_{0.5}$, R_2SiO, $RSiO_{1.5}$ and SiO_2, wherein R is, independently, a substituted

or unsubstituted monovalent hydrocarbon radical and said organopolysiloxane resin has an R to Si ratio of, approximately, 1.0 to 1.99 R groups for each silicon atom; (ii) a combination of emulsifying agents effective for dispersing said organopolysiloxane resin in a water based emulsion wherein said emulsifying agent combination is comprised of 5 to 95 percent by weight of a cellulosic emulsification agent and 5 to 95 percent by weight of an anionic emulsifying agent; and (iii) an amount of water effective for providing a preselected silicone resin solids content by weight of said silicone resin-water emulsion;

(b) 25 to 50 parts by weight pigment;

(c) 4 to 12 parts by weight coupling solvent;

(d) 0 to 1 parts by weight neutralizing agent;

(e) 4 to 8 parts by weight water; and

(f) 0 to 0.2 parts by weight catalyst.

4,383,063

POLYVINYL ALCOHOL BASED SIZE COMPOSITION

Richard W. Rees, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 9, 1981, Ser. No. 252,372

Int. Cl.³ C08K 5/19

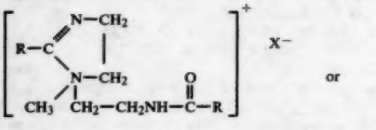
U.S. Cl. 524—91 9 Claims

1. A composition consisting essentially of

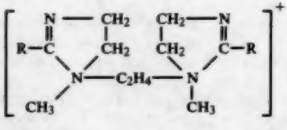
(a) vinyl alcohol polymer selected from the group consisting of polyvinyl alcohol and vinyl alcohol/methylmethacrylate copolymer, and

(salt additive selected from the group consisting of

(α) quaternary imidazolinium salt having the formula

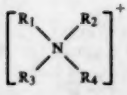


or



where X is anion and R is an alkyl group containing 12 to 18 carbon atoms, and

(β) quaternary ammonium salt having the formula



where

R_1 is an alkyl group containing 1 to 3 carbon atoms

R_2 is an alkyl group containing 1 to 3 or 12 to 22 carbon atoms

R_3 and R_4 are alkyl groups containing 12 to 22 carbon atoms, and

X is an anion

wherein the weight ratio of salt additive to vinyl alcohol polymer is from about 0.001 to about 0.02.

4,383,064

FLAME RETARDANT POLYAMIDE COMPOSITION

Hiroshi Iida, Nagoya, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 880,066

Claims priority, application Japan, Mar. 3, 1977, 52/23090; Aug. 8, 1977, 52/94132; Dec. 29, 1977, 52/159104

Int. Cl.³ C08K 5/34

U.S. Cl. 524—100 4 Claims

1. A flame retardant polyamide composition comprising:

(a) a polyamide resin as a matrix,

(b) 1 to 40%, based on the weight of said polyamide matrix, of a flame-retarding agent in the form of fine particles dispersed in said polyamide matrix, said flame-retarding agent consisting of at least one member selected from the group consisting of:

(i) crystals of an addition salt of an acid component selected from cyanuric acid and isocyanuric acid with a basic component consisting of melamine, and;

(ii) mixed crystals of addition salts of an acid component selected from cyanuric acid and isocyanuric acid, with a basic component consisting of a mixture of melamine and acetoguanamine, the molar amount of said acetoguanamine in said mixture being not larger than that of said melamine and;

(c) 0.1 to 3.0%, based on the weight of said polyamide matrix, of a hindered phenol compound dispersing agent for substantially uniformly distributing said flame-retarding agent in said polyamide resin matrix and for enhancing the mechanical strength of said polyamide resin matrix, said hindered phenol compound being at least one compound selected from the group consisting of octadecyl-3-(3',5'-di-tert.-butyl-4-hydroxyphenyl)propionate, 1,6-hexanediol-bis-[3-(3,5-di-tert.-butyl-4-hyroxyphenyl)propionate] and N,N'-hexamethylene-bis(3,5-di-tert.butyl-4-hydroxy-hydrocinnamide).

4,383,065

STABILIZED POLYPYRROLIDONE COMPOSITION

Gar L. Woo, Tiburon, and Phillip H. Parker, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 29, 1980, Ser. No. 220,575

Int. Cl.³ C08J 3/20; C08L 77/02; C08G 69/48

U.S. Cl. 524—114 13 Claims

1. A composition comprising a major amount of a normally solid poly-2-pyrrolidone having a weight average molecular weight of about from 35,000 to 100,000 in which at least a major portion of the carboxyl end groups are modified by replacement of hydroxy radical in said carboxyl end group with a capping radical selected from the group consisting-aminoalkylenamine, and a minor amount, effective to improve the melt processability of said modified poly-2-pyrrolidone of an additive, having a boiling point of at least 260° C. and a melting point below about 250° C., selected from the group consisting of epoxides having 2 through 60 carbon atoms and having at least one epoxy oxygen radical linking adjacent carbon atoms; polyhydric alcohols; organic isocyanates having at least 6 carbon atoms; and mixtures thereof and wherein the alkylene moiety of said capping radical has at least two carbon atoms separating the -amino moiety thereof from the end amine moiety thereof; and wherein said weight average molecular weight is determined by solution viscosity using a solution containing 0.50 or 1.0 grams of the dried extracted polymer in 10 ml of 88% aqueous formic acid, and applying a Gardner viscosity molecular weight type relationship developed from specific viscosities of 0.1 g of known weight average molecular weight poly-2-pyrrolidone polymers in 100 ml of m-cresol at 25° C.

4,383,066

POLYPHENYLENE ETHER RESIN COMPOSITION

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo; Masao Okabe, Abiko, and Kozo Ishiyama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Apr. 7, 1981, Ser. No. 251,942

Claims priority, application Japan, Apr. 15, 1980, 55-49392; Jul. 14, 1980, 55-95815; Oct. 22, 1980, 55-147763

Int. Cl.³ C08K 5/53

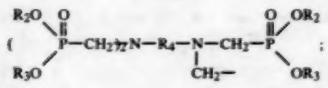
U.S. Cl. 524—124 16 Claims

1. A polyphenylene ether resin composition having improved heat stability, said composition consisting essentially of a polyphenylene ether resin matrix, and dispersed therein, a phosphonic acid or its derivative of the formula

(I)

wherein

R_1 represents an unsubstituted phenyl or naphthyl group or a phenyl or naphthyl group substituted with 1 to 3 alkyl groups, or a linear or branched alkyl group with 1 to 18 carbon atoms, or a group of the following formula (a)



R_2 and R_3 are identical or different and each represents hydrogen atom, an alkali or alkaline earth metal, an unsubstituted phenyl group or phenyl group substituted with 1 to 3 alkyl groups, or an alkyl group with 1 to 10 carbon atoms; and R_4 is a divalent hydrocarbon group with 2 to 10 carbon atoms.

4,383,067

POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH PHOSPHATE ESTERS

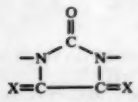
Tad L. Patton, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 29, 1981, Ser. No. 288,244

Int. Cl.³ C08K 5/52

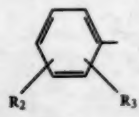
U.S. Cl. 524—141 27 Claims

1. A stable meltable composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=O or NH, provided at least one X is O and a plasticizing amount greater than 15 wt.% to about 60 wt% of unhalogenated organic phosphate esters of the structure: $(R_1—O)_3P=O$ wherein R_1 is:

(a)



and each of R_2 and R_3 is independently selected from H or $—CH_3$ or (b) an alkyl radical having 1 to 4 carbon atoms.

4,383,068

THIXOTROPIC COATING AGENTS BASED ON UREA ADDUCT OF POLYAMINE AND MONOISOCYANATE

Dieter Brandt, Eschweiler, Fed. Rep. of Germany, assignor to August Merckens Nachfolger Kommanditgesellschaft, Eschweiler, Fed. Rep. of Germany

Continuation of Ser. No. 651,382, Jan. 22, 1976, abandoned, which is a continuation of Ser. No. 570,549, Apr. 22, 1975, abandoned, which is a continuation of Ser. No. 422,637, Dec. 7, 1973, abandoned. This application Jan. 15, 1979, Ser. No. 3,554

Claims priority, application Austria, Dec. 11, 1972, 10494/72; Mar. 28, 1973, 2741/73

The portion of the term of this patent subsequent to Jul. 8, 1992, has been disclaimed.

Int. Cl.³ C08K 5/21

U.S. Cl. 524—196 19 Claims

1. A thixotropic coating agent comprising a binder and a thixotroping agent; said thixotropizing agent comprising a urea adduct obtained by reacting (a) polyamine containing at least two amino groups, and (b) isocyanate including monoisocyanate compounds and diisocyanate compounds in the following mixing ratios: 30 to 70 equivalent % of isocyanate groups from the diisocyanate compound to 70 to 30 equivalent % of the monoisocyanate compound.

4,383,069

POLYARYLENE SULPHIDE COMPOSITIONS

Glyndwr J. Davies, Southall, England, assignor to The Glacier Metal Company Limited, Wembley, England

PCT No. PCT/GB81/00128, § 371 Date Mar. 3, 1982, § 102(e) Date Mar. 3, 1982, PCT Pub. No. WO82/00154, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 2, 1981, Ser. No. 355,747

Claims priority, application United Kingdom, Jul. 4, 1980, 8022065

Int. Cl.³ C08K 5/12

U.S. Cl. 524—299 6 Claims

1. A composition of matter is characterised in that it comprises polyarylene sulphide mixed with an aryl ester of an aryl alcohol, the ester being in solution in the resin.

4,383,070

STORAGE STABLE POLYURETHANE COMPOSITIONS

Peter H. Markusch, McMurray, Pa.; Terry A. Potter, New Martinsville, W. Va.; Kenneth P. Yonek, McMurray, and James W. Rosthauser, Imperial, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 27, 1982, Ser. No. 382,509

Int. Cl.³ C08G 18/50

U.S. Cl. 524—317 16 Claims

1. An organic polyurethane composition having a solids content of about 10 to 100 weight percent which comprises

(1) isocyanate-terminated polyurethanes which are prepared by reacting

(a) reaction products of the phosgenation of aniline-formaldehyde condensates containing, based on the total weight of component (a),

(i) about 0 to 10 weight percent of 2,2'-diphenylmethane diisocyanate,

(ii) about 10 to 40 weight percent of 2,4'-diphenylmethane diisocyanate,

(iii) about 30 to 60 weight percent of 4,4'-diphenylmethane diisocyanate and

(iv) about 25 to 60 weight percent of polymeric isocyanates having 3 or more isocyanate groups; with

(b) a polyol component comprising

(i) a polyether polyol with an average molecular weight of less than about 10,000 and which contains at least two hydroxyl groups and at least one tertiary nitro-

gen atom and which has at least 5 ether groups between the tertiary nitrogen atom and the hydroxyl groups, and optionally

(ii) an additional polyol with an average molecular weight of less than about 10,000 and which contains at least two hydroxyl groups and does not contain a tertiary nitrogen atom,

wherein the polyol component (b) contains about 20 to 100 weight percent of component (i) and about 0 to 80 weight percent of component (ii) and wherein the quantities of (a) and (b) are chosen to provide component (1) with an isocyanate content of about 5 to 30 weight percent based on the total weight of component (1) and a viscosity of about 2,500 to 6,500 cps; and, optionally

(2) a monoisocyanate comprising a member selected from the group consisting of para-toluene-sulfonyl isocyanate and the reaction product of 2,4-toluene diisocyanate or 2,6-toluene diisocyanate with an alcohol of the formula R_1OH wherein R_1 represents a hydrocarbon group having from 1–18 carbon atoms optionally interrupted by ether groups,

wherein up to about 50% by weight of component (2) is used based on the weight of component (1).

4,383,071

FLAME AND SMOKE RETARDANT ELASTOMERS FORMED BY GRAFTING VINYLIDENE CHLORIDE ON DIENE/BUTYL ACRYLATE COPOLYMERS

David F. Lawson, Uniontown; Robert A. Hayes, Cuyahoga Falls, and Alan G. Altenau, Hudson, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 4, 1981, Ser. No. 260,477

Int. Cl.³ C08K *3/22;* **C08F** *279/02*

U.S. Cl. 524—432 **7 Claims**

1. An elastomeric flame and smoke retardant graft copolymer, having excellent low temperature flexibility, consisting essentially of:

(a) a backbone copolymer derived from a conjugated diene and butyl acrylate; and

(b) a side chain polymer derived from vinylidene chloride; wherein the graft copolymer contains from 10 to 70 percent by weight of units derived from a conjugated diene, from 5 to 40 percent by weight of units derived from butyl acrylate and from 15 to 75 percent by weight of units derived from vinylidene chloride.

4,383,072

VULCANIZABLE RUBBER MIXTURE

Klaus Thiel, Lindau; Roland Stecher, Rehlings, and Jochen Schnetger, Lindau, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1981, Ser. No. 303,092

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035510

Int. Cl.³ C08L *61/10*

U.S. Cl. 524—432 **3 Claims**

1. Vulcanizable rubber mixture for producing a leather-hard rubber, which mixture is suitable for use in making a composite profile produced by simultaneous extrusion and vulcanization of two different grades of rubber, comprising

(a) 60 to 80 parts by weight acrylonitrile rubber which under vulcanizing conditions will not split off acid groups,

(b) 20 to 40 parts by weight polar rubber selected from the group consisting of polychloroprene, chlorosulfonated polyethylene, chlorinated polyethylene and mixtures thereof, which under vulcanizing conditions will split off acid groups,

(c) 15 to 50 parts by weight phenolformaldehyde reinforcement resin,

(d) 0.5 to 4 parts by weight hexamethylene tetramine, and

(e) 0.5 to 3 parts by weight sulfur.

4,383,073

CATIONIC RESIN CURABLE WITH ACID CATALYZED CROSS-LINKERS

Ritchie A. Wessling, Midland; Larry D. Yats, Clare, both of Mich., and William O. Perry, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 20, 1981, Ser. No. 294,690

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—486 **5 Claims**

1. A water-compatible composition comprising (A) one or more resinous polymers having a backbone which is linear or substantially linear and consists essentially of at least one oxyaryleneoxyalkylene or oxyarylenoxy-(1,3-(2-hydroxy)-alkylene)) unit and which bears at least two active hydrogen groups, said resinous composition having carbamoylpyridinium groups attached through a ring nitrogen and (B) a cross-linking agent selected from the group consisting of amine aldehyde resins and phenol aldehyde resins.

4,383,074

BUSHINGS

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 16, 1982, Ser. No. 388,806

Int. Cl.³ C08K *3/04;* **F16C** *27/06;* **F16F** *1/38*

U.S. Cl. 524—496 **8 Claims**

1. A resilient bushing exhibiting improved fatigue life and having an annular molded vulcanized rubber compound insert in compressed relation between a substantially rigid cylindrical inner member and a substantially rigid cylindrical outer member wherein said rubber compound contains (A) from about 10 to 30 phr of a reinforcing furnace carbon black having a particle size of from about 15 to 50 mμ, a surface area of from about 60 to 140 m^2/g and a DBPA of from about 80 to 135 cc/100 g and (B) from about 5 to 30 phr of a reinforcing furnace carbon black having a particle size of from about 50 to 85 mμ, a surface area of from abut 20 to 50 m^2/g and a DBPA of from about 50 to 80 cc/100 g and where the rubber of said compound is selected from the group consisting of natural rubber and polyisoprene rubber and mixtures thereof.

3. A vulcanizable unvulcanized rubber compound containing (A) from about 10 to 30 phr of a reinforcing furnace carbon black having a particle size of from about 15 to 50 mμ, a surface area of from about 60 to 140 m^2/g and a DBPA of from about 80 to 135 cc/100 g and (B) from about 5 to 30 phr of a reinforcing furnace carbon black having a particle size of from about 50 to 85 mμ, a surface area of from about 20 to 50 m^2/g and a DBPA of from about 50 to 80 cc/100 g.

4,383,075

THERMOSETTING ACRYLIC POLYVINYLIDENE FLUORINE COMPOSITION

Peter T. Abel, Berea, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,771

Int. Cl.³ C08L *61/00*

U.S. Cl. 524—512 **4 Claims**

1. An aqueous heat curable coating composition for use as a protective surface coating wherein the composition contains a thermosetting binder composition comprising:

on a weight basis, between about 4% and 95% fluorocarbon resin, between 4% and 95% high Tg reactive acrylic emulsion polymer having a Tg greater than 50° C., and between 1% and 30% melamine resin adapted to react with said acrylic polymer upon heating to form a cross-linked matrix, said composition adapted to be heat cured at temperatures above about 177° C.

4,383,076

SINGLE COMPONENT ENAMELS BASED ON BLOCKED POLYISOCYANURATE POLYISOCYANATES

Elmar Wolf, Am Böckenbusch 3a, and Rainer Gras, An der Ziegelei 91, both of 4690 Herne 2, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 186,958

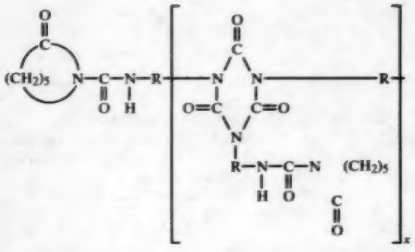
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938855

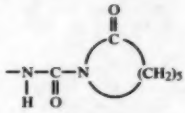
Int. Cl.³ C08G *18/80;* C08K *5/01, 5/07, 5/09*

U.S. Cl. 524—589 8 Claims

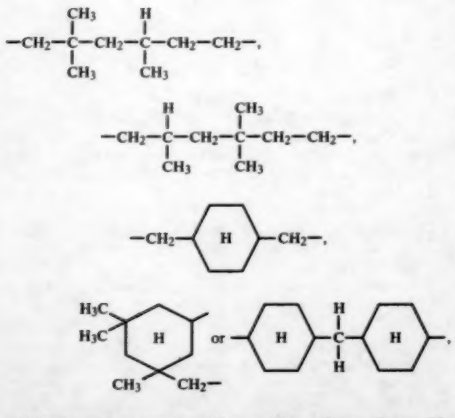
1. A single component enamel composition, comprising:

from 40% to 80% by wt. of a resin in at least one solvent, said resin comprising a polyester component containing more than one hydroxy group in the molecule and having a second order transition temperature ranging between +25° C. and −25° C. and a hardener component of the formula:





wherein x ranges from 0 to 4 with the proviso that at a minimum, the hardener must comprise a material having a value for x of one, and wherein R is $-(CH_2)_n-$ with $3 \leqq n \leqq 12$, or is



said hardener prepared by adding a mixture of propylene oxide and 1,4-diazabicyclooctane (2,2,2) as a catalyst to a cycloaliphatic diisocyanate, trimerizing said diisocyanate to the desired degree, deactivating the catalyst and then capping said trimerized isocyanurate with ϵ-caprolactam.

4,383,077

DICYANDIAMIDE-FORMALDEHYDE CONDENSATES MODIFIED WITH UREA AND PROCESS FOR PREPARING THE SAME

Ralph A. Bankert, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 8, 1981, Ser. No. 328,753

Int. Cl.³ C08L *61/24*

U.S. Cl. 524—598 14 Claims

1. A process for preparing improved water-soluble thermosettable resinous compositions containing dicyandiamide-formaldehyde condensates which process comprises (1) forming a precondensate solution by refluxing for about 1 to about 4 hours an aqueous mixture of (a) a base reaction product of 1 mole of dicyandiamide, 0.75 mole to 1.5 moles of formaldehyde and an acid salt of a water-soluble polyaminopolyamide in an amount sufficient to provide from about 0.125 to about 0.5 equivalent of basic nitrogen and (b) an ammonium salt in an amount such that there will be from 0.7 equivalent to about 1.2 equivalents of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt in the aqueous medium, (2) adding to the precondensate solution from 0.30 to 0.45 mole of urea per equivalent of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt, and heating the aqueous mixture at about 80° to about 110° C. for about 0.5 to about 1.5 hours until a solution of modified precondensate is formed, (3) adding from about 1.25 to about 3.75 moles of formaldehyde to the aqueous solution of modified precondensate and (4) heating the resulting mixture at about 60° to about 100° C. until the viscosity of an aqueous solution of the resulting reaction product at a solids content of 50% is from about U to Z on the Gardner-Holdt scale.

4,383,078

PROCESS FOR THE PRODUCTION OF ALKALI METAL POLYHYDROXY LIGNIN-CELLULOSE POLYMER

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 207,391, Nov. 17, 1980, Pat. No. 4,336,340, which is a continuation-in-part of Ser. No. 134,975, Mar. 3, 1980, Pat. No. 4,283,311, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Aug. 24, 1981, Ser. No. 295,843

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ C08J *9/02;* C08G *18/02*

U.S. Cl. 524—733 30 Claims

1. The process for the production of alkali metal polyhydroxy lignin-cellulose polymer by mixing, heating and reacting the following components:

(a) In an amount of 50 parts by weight, broken-down alkali metal plant polymer which has been produced by mixing 2 to 5 parts by weight of an alkali metal hydroxide, selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof, with 3 parts by weight of cellulose-containing plant particles, then heating the mixture at from 150° C. to 220° C. while agitating for 5 to 60 minutes;

(b) In an amount of 10 to 200 parts by weight, an organic polyhydroxy compound; the mixture is heated at a temperature between ambient temperature and the boiling temperature of the organic polyhydroxy compound while agitating for 30 to 120 minutes.

4,383,079

EXTENSION OF POLYURETHANE HYDROGEL CURE TIME

Alton J. Gasper, Minneapolis, and James N. Wells, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 9, 1981, Ser. No. 252,374
Int. Cl.³ C08G 18/30
U.S. Cl. 524—767 2 Claims

1. A method of curing diisocyanate-terminated polyurethane prepolymer curable in the presence of water to form a hydrogel including the step of reacting said prepolymer in the presence of sufficient water to form a hydrogel, the improvement comprising adding sufficient micelle-forming adduct to said water to significantly inhibit the cure rate of said prepolymer, wherein said micelle-forming adduct is an alcohol having the general formula $H(CH_2)_x(OH)_y$ where x is 1–6 and y is 1–3.

4,383,080

PROCESS FOR CURING POLY(ARYLENE SULFIDES)

Robert L. Dupree, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1982, Ser. No. 365,204
Int. Cl.³ C08F 283/00
U.S. Cl. 525—537 11 Claims

1. In a process for curing a poly(arylene sulfide) resin the improvement which comprises curing said poly(arylene sulfide) resin at a temperature below the melting point of said resin in the presence of an ozone containing gas wherein ozone is present in an amount to effect an increase in the cure rate of said poly(arylene) resin.

4,383,081

CATIONIC ACRYLAMIDE CHEMICALLY MODIFIED ASPHALTS

Anthony V. Grossi, Newark; Leon A. Hagelee, Minerva Park; Louis T. Hahn, and Alfred Marzocchi, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 11, 1981, Ser. No. 329,899
Int. Cl.³ C08F 289/00; C08G 83/00; C08H 5/00
U.S. Cl. 525—54.5 16 Claims

12. A process for producing a chemically modified asphalt which comprises charging into a reactor (i) an acrylamide, (ii) an asphalt that has been prereacted with a vinyl aromatic monomer and a rubbery polymer and, (iii) optionally, a vinyl aromatic monomer, and heating the materials in the reactor at an elevated temperature for several hours.

4,383,082

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING POLYOLEFIN IN HIGH AMOUNT

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 1, 1981, Ser. No. 326,200
Int. Cl.³ C08L 53/00
U.S. Cl. 525—92 7 Claims

1. A thermoplastic composition, comprising in intimate admixture:

(a) a polyphenylene ether resin; and

(b) in property improving combination, a polyethylene resin and a hydrogenated radial teleblock copolymer of an alkenyl aromatic compound and a conjugated diene, said polyethylene being present in an amount of at least 20 parts by weight based on the combined amount of (a) and (b).

4,383,083

POLYAMIDE MOULDING COMPOSITION

Werner Nielinger; Bert Brassat; Rüdolf Binsack, and Dieter Neuray, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,472
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943515
Int. Cl.³ C08L 77/10, 77/00
U.S. Cl. 525—183 5 Claims

1. Thermoplastic moulding mixtures consisting of

(1) from 95 to 65% by weight of an amorphous polyamide;

(2) from 5 to 35% by weight of a copolymer of

(a) from 99 to 60% by weight of alkadiene containing from 4 to 6 carbon atoms; and

(b) from 40 to 1% by weight of acrylonitrile

(3) and optionally usual additives, the sum of (1) to (3) and the sum of (a) and (b) respectively amounting always to 100% by weight.

4,383,084

POLYAMIDE-POLYOLEFIN COMPOSITIONS

Edward F. Paschke, Wheaton; Michael A. Stasi, Downers Grove, and Edward F. Rader, Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1981, Ser. No. 263,571
Int. Cl.³ C08L 77/00
U.S. Cl. 525—184 8 Claims

1. A composition comprising a polyamide of amorphous structure and a polyolefin selected from the group consisting of low density polyethylene, high density polyethylene and polypropylene wherein said composition is characterized by improved impact resistance and contains said polyolefin from about 2.5 to 5 percent by weight of the combined weight of said polyamide and said polyolefin, said polyamide being selected from the group consisting of polymers and copolymers of terephthalamide and isophthalamide wherein said terephthalamide and isophthalamide are present in ratios by weight of from 100 parts to zero parts per hundred isophthalamide and from zero parts to 100 parts per hundred terephthalamide.

4,383,085

RUBBER COMPOSITION FOR TIRE

Tatsuo Fujimaki, Kodaira; Shinsuke Yamaguchi, Mizuho; Tomoharu Yamada, and Seisuke Tomita, both of Higashimurayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,938
Claims priority, application Japan, Sep. 20, 1980, 55-130076
Int. Cl.³ C08F 8/42; C08L 7/00, 9/06, 47/00
U.S. Cl. 525—196 4 Claims

1. A rubber composition for a tire tread consisting mainly of a rubber component containing at least 20 parts by weight, based on 100 parts by weight of the rubber component, of a high vinyl butadiene-styrene copolymer rubber obtained by copolymerizing randomly styrene with 1,3-butadiene, and containing 3–30% by weight of bonded styrene and 60–95% by weight of 1,2-bond in the butadiene unit, and further containing bonds of at least one metal selected from silicon, germanium, tin and lead with butadienyl group in its main chain in a weight fraction of at least 20% by weight, wherein said rubber component is a diene rubber having a glass transition temperature not higher than −50° C.

4,383,086
FILAMENTS AND FIBERS OF ACRYLONITRILE COPOLYMER MIXTURES
Walter Fester, Königstein; Bernd Huber, Hofheim am Taunus, and Gerhard Schmidt, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed May 29, 1980, Ser. No. 154,488
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922667
Int. Cl.³ C08L 33/20
U.S. Cl. 525—238 3 Claims

1. A filament or fiber of mixtures of two acrylonitrile copolymers, wherein the filament-forming substance consists of a mixture of from 20 to 70 weight % of an acrylonitrile copolymer A containing at least 80 weight % of acrylonitrile units and from 0.3 to 20 weight % of other units copolymerizable with acrylonitrile, and from 80 to 30 weight % of an acrylonitrile copolymer B containing from 50 to 75 weight % of acrylonitrile units, from 25 to 45 weight % of vinyl chloride and/or vinylidene chloride units and from 0 to 5 weight % of other units copolymerizable with acrylonitrile; the filaments having a boil-off shrinkage of 20% and more and a knot strength of more than 10 cN/tex, and the filament-forming substance of A and B not being homogeneously soluble as a 24% solution in N,N-dimethyl formamide.

4,383,087
ORGANIC POLYMER LAYERED TRICHALCOGENIDES
David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Feb. 4, 1982, Ser. No. 345,603
Int. Cl.³ C08F 8/42, 8/26
U.S. Cl. 525—274 7 Claims

1. A process for preparing an organic polymer layered trichalcogenide which comprises:
reacting a lithiated styrene divinylbenzene copolymer with a cyclopentadienyl transition metal trichloride to form a cyclopentadienyl transition metal trichloride-substituted styrene divinylbenzene copolymer; and
reacting the cyclopentadienyl transition metal trichloride-substituted styrene divinylbenzene copolymer with a chalcogenide compound selected from the group consisting of a lithium chalcogenide and a chalcogenide-bearing acid to form a cyclopentadienyl transition metal trichalcogenide-substituted styrene divinylbenzene copolymer.

4,383,088
ORGANIC POLYMER LAYERED DICHALCOGENIDES
David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Feb. 4, 1982, Ser. No. 345,604
Int. Cl.³ C08F 8/26, 8/42
U.S. Cl. 525—274 7 Claims

1. A process for the preparation of an organic polymer layered dichalcogenide which comprises:
reacting a dicyclopentadienyl transition metal dichloride-substituted styrene divinylbenzene copolymer with a chalcogenide compound selected from the group consisting of a lithium chalcogenide and a chalcogenide-bearing acid to form a dicyclopentadienyl transition metal dichalcogenide-substituted styrene divinylbenzene copolymer.

4,383,089
PROCESS FOR THE PRODUCTION OF POLYEPOXY SILICATE RESIN
David H. Blount, 5450 Lea St., San Diego, Calif. 92105
Division of Ser. No. 306,184, Sep. 28, 1981, which is a continuation-in-part of Ser. No. 257,126, Apr. 24, 1981, Pat. No. 4,313,857, which is a continuation-in-part of Ser. No. 203,730, Nov. 3, 1980, Pat. No. 4,281,110, which is a continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, Pat. No. 4,243,757, which is a continuation-in-part of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Apr. 2, 1982, Ser. No. 364,672
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ C08F 283/10; C08G 77/02; C08L 63/00
U.S. Cl. 525—476 17 Claims

1. The process for the production of polyurethane silicate resinous product by the following steps:
(a) mixing and reacting 10 to 200 parts by weight of polyfunctional epoxide compound and 50 parts by weight of an alkali metal aldehyde broken down lignin-cellulose silicate polymer thereby
(b) producing an aldehyde broken down lignin-cellulose silicate polyepoxy resin; then
(c) mixing and reacting 100 parts by weight of a polyisocyanate with 50 to 200 parts by weight of the aldehyde broken down lignin-cellulose silicate polyepoxy resin, thereby
(d) producing a polyurethane silicate resinous product.

4,383,090
POLYEPOXIDE CURING BY POLYMERCAPTANS AND A REACTION PRODUCT OF AMINO ACIDS OR LACTAMS WITH AMINES
Allen T. Slocki, Plymouth, Mich.; Brian J. Carr, Fairfax, Calif., and John F. Simone, White Plains, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.
Filed Sep. 28, 1981, Ser. No. 306,323
Int. Cl.³ C08G 59/54, 59/56, 59/66
U.S. Cl. 525—502 14 Claims

1. A curing system for epoxy resins and mixtures of epoxy resins and polyacrylate esters comprising:
(a) at least one polymercaptan, and
(b) at least one catalytic co-curing agent which is the reaction product of:
(i) at least one amine containing at least one primary aliphatic amine substituent where the aliphatic moiety is ethylene or greater with
(ii) at least one member of the group consisting of amino acid, its corresponding lactam and amide forming derivatives of same.

10. A curable epoxy resin composition comprising at least one polyepoxide and a curing system comprising:
(a) at least one polymercaptan, and
(b) at least one co-curing agent which is the reaction product of:
(i) at least one aliphatic amine containing at least one primary aliphatic amine substituent where the aliphatic moiety is ethylene or greater with
(ii) at least one member of the group consisting of amino acid, its corresponding lactam and amide forming derivatives of same.

4,383,091
URETHANE MODIFIED POLYMERS HAVING HYDROXYL GROUPS
Bruce L. Burton, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 188,810, Sep. 19, 1980, Pat. No. 4,338,242. This application Jul. 1, 1982, Ser. No. 394,393
Int. Cl.³ C08L 63/10
U.S. Cl. 525—528 5 Claims

1. A process for preparing vinyl ester resins having reduced viscosities, said process comprising the reaction of at least 50

percent of the secondary hydroxyls of an amine-free vinyl ester of a polyglycidyl ether with isocyanatoethylmethacrylate using a tin salt as catalyst.

4,383,092

INHIBITION OF DISCOLORATION OF TRANSESTERIFICATION POLYMERS WITH CHROMIUM, NICKEL, TANTALUM OR GLASS LINED REACTOR

Allen W. Ko, Evansville, Ind., and John B. Starr, Jr., Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 11, 1980, Ser. No. 176,865
Int. Cl.³ C08G *63/62, 63/02;* C08J *9/26, 9/28*
U.S. Cl. 526—62 **17 Claims**

1. In a process for the preparation of a moldable polyarylate or polyaryl carbonate by transesterification and polycondensation of

(1) a mixture of at least one diaryl ester of an aromatic carboxylic acid and at least one dihydric phenol, or

(2) a mixture of (1) with at least one diaryl carbonate,

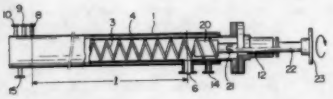
the improvement which comprises reducing discoloration of the resulting polymer by carrying out the transesterification in a reaction vessel having a contact surface composed of tantalum, nickel, or chromium, or mixtures of any of the foregoing.

4,383,093

TUBULAR POLYMERIZATION REACTOR, AND PROCESS FOR POLYMERIZATION

Shigemi Shiraki, and Saiji Nakano, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 270,092
Claims priority, application Japan, Jun. 4, 1980, 55-74377
Int. Cl.³ C08F *2/00, 10/00*
U.S. Cl. 526—64 **9 Claims**



1. A process for polymerization in a tubular polymerization reactor comprising a feed opening for a polymerizable material at one end portion, a withdrawal opening for the resultant polymer at the other end portion, a tubular reaction space within the reactor extending from said feed opening to said withdrawal opening, and a rotary conveying member disposed within the reaction space and extending therealong with some clearance from the inner wall surface of the polymerization reactor, which comprises feeding the polymerizable material into said feed opening and withdrawing the resultant polymer from said withdrawal opening; characterized in that

(A) in said polymerization reactor,

(i) the length-to-diameter ratio of the tubular reaction space is about 20 or more,

(ii) the rotary conveying member is a tubular coil-like shape, and

(iii) the ratio of the outside diameter of a cylinder defined by the coil-like rotary conveying member to the diameter of the tubular reaction space is 0.7 to 0.9, and

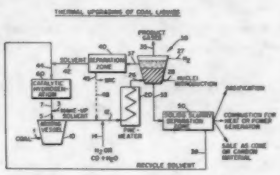
(B) the polymerization is carried out while the peripheral speed of a cylinder defined by the tubular coil-like conveying member is not less than about 0.3 meters/sec.

4,383,094

CONTINUOUS REACTION/SEPARATION METHOD FOR SOLUTION POLYMERIZATION OF OLEFINS

Darrell D. Whitehurst, Titusville, N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 64,142, Aug. 6, 1979, Pat. No. 4,303,494. This application Aug. 27, 1981, Ser. No. 296,765
Int. Cl.³ C08F *2/14*
U.S. Cl. 526—88 **9 Claims**



1. A continuous reaction/separation method for solution polymerization of olefins over Ziegler catalysts which comprises:

(a) tangentially introducing solvent, monomer and Ziegler catalysts into the lower, smaller end of an elongated, vertical reaction zone of inverted frusto-conical configuration, thereby imparting an upward, swirling motion to the reaction medium in the reaction zone, the horizontal velocity at the bottom of the reaction zone being sufficient to cause fluidization of larger solid polymer particles and concentration of them in the central, lower portion of the reaction zone and the vertical velocity at the top of the reaction zone being sufficiently small to avoid carry-over of smaller solid polymer particles but sufficiently large to concentrate them in the upper portion of the reaction zone;

(b) maintaining the resulting reaction medium in the reaction zone in a swirling, fluidized state under conditions which promote the formation and growth of solid particles of polymer in solution;

(c) withdrawing a stream comprising gaseous olefins from the top of the reaction zone and returning said gaseous olefins to the reaction zone;

(d) withdrawing a stream comprising substantially solids-free solvent from the upper part of the reaction zone and returning the solvent to the reaction zone;

(e) withdrawing a slurry consisting essentially of larger polymer particles and solvent from the bottom of the reaction zone; and

(f) recovering solid polymer products from the slurry.

4,383,095

PROCESS FOR THE PREPARATION OF HIGH DENSITY ETHYLENE POLYMERS IN FLUID BED REACTOR

George L. Goeke, Belle Mead; Burkhard E. Wagner, Highland Park, and Frederick J. Karol, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 12,719, Feb. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 969,588, Dec. 14, 1978, abandoned. This application Nov. 20, 1981, Ser. No. 323,352
Int. Cl.³ C08F *2/34, 10/02*
U.S. Cl. 526—88 **10 Claims**

1. A catalytic process for producing ethylene homopolymers or copolymers with a Ti containing catalyst at a productivity of $\geqq$50,000 pounds of polymer per pound of Ti under a pressure of $<$1000 psi in the gas phase

said polymer being produced in granular form and having a density of about $\geqq$0.95 to $\leqq$0.97 and a melt flow ratio of about $\leqq$22 to $\geqq$32

which comprises homopolymerizing ethylene or copolymer-

izing ethylene with at least one C_3 to C_8 alpha olefin, at a temperature of about 30° to 115° C. by contacting the monomer charge in the gas phase reaction zone, with particles of a catalyst system comprising a precursor composition impregnated in a porous support and when so impregnated having the formula:

$$Mg_mTi_1(OR)_nX_p[ED]_q$$

wherein R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,
X is selected from the group consisting of
Cl, Br, I, or mixtures thereof,
ED is an electron donor compound,
m is $\leqq 0.5$ to $\geqq 56$,
n is 0, 1 or 2,
p is $\leqq 2$ to $\geqq 116$ and
$q = 1.5\,m + 2$,
ED is a liquid organic electron donor compound in which said precursor composition and the Ti and Mg component thereof are soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,
said impregnated precursor composition being activated in said reaction zone with >10 to 400 mols of activator compound per mol of Ti in said precursor composition,
said activator compound having the formula

$$AlR_3$$

wherein the R's are the same or different, and are C_1 to C_{14} saturated hydrocarbon radicals.

4,383,096

METHOD OF POLYMERIZING 1-OLEFINS

Mitsuzo Shida, Barrington; Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 63,111, Aug. 1, 1979, Pat. No. 4,263,171.
This application Nov. 3, 1980, Ser. No. 203,713
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—129 **7 Claims**

1. A method of making polymers of one or more 1-olefins which comprises polymerizing said olefins under polymerizing conditions with a catalyst active in the presence of an alkyl aluminum co-catalyst, said catalyst being prepared by mixing, in the presence of a solvent, reactive materials comprising dry particles of silica, said particles having been preactivated by heating at between about 200° C. and 900° C., and a complex of the general formula $(MgR_2)_m(AlR_3')_n$ where R and R′ are alkyl groups and m/n is between about 0.5 and 10, inclusive, to form a reaction mixture of said solvent and a hydrocarbon insoluble first reaction product, and mixing said reaction mixture with a halide, oxyhalide or alkoxyhalide of tetravalent titanium to form a second reaction product, and evaporating said solvent from said second reaction product, said titanium compound being present in substantially equimolar ratio with respect to said active hydroxyl and oxide groups in said silica and with respect to the total magnesium and aluminum present in said first reaction product.

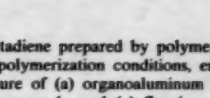
4,383,097

MOLECULAR WEIGHT REGULATION OF CIS-1,4-POLYBUTADIENE

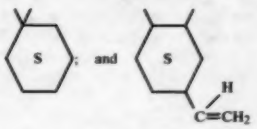
Kenneth F. Castner, Uniontown, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 21, 1981, Ser. No. 295,037
Int. Cl.³ C08F 4/70
U.S. Cl. 526—133 **14 Claims**

1. A process for the regulation of the molecular weight of high cis polybutadiene prepared by polymerizing butadiene under solution polymerization conditions, employing as the catalyst, a mixture of (a) organoaluminum compounds; (b) organonickel compounds; and (c) fluorine containing compounds; said polymerization being conducted in the presence of a molecular weight regulator comprising nonconjugated diolefins of the formula:



wherein R_1 is a member selected from the group consisting of $-CH_2-$; $-C_2H_4-$; $-C_3H_6$;



and wherein R_2 is a member
selected from the group consisting of H, $-CH_3$, $-C_2H_5$ and $-C_3H_7$ and wherein R_2 is trans to R_1, said molecular weight regulator being employed in amounts ranging from 0.06 to 10 parts per 100 parts of butadiene.

4,383,098

CATALYSTS AND BINDER SYSTEMS FOR MANUFACTURING SANDSHAPES

James E. Menting, Algonquin, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 132,894, Mar. 24, 1980, Pat. No. 4,317,763.
This application Jul. 13, 1981, Ser. No. 282,409
Int. Cl.³ C08F 134/02; C08G 14/04, 14/08
U.S. Cl. 526—270 **10 Claims**

1. A catalyzed resin composition adapted, upon baking, to bind an inert granular material into a predeterminable shape, said composition including a resin component capable of cure by an acid catalyst, and a catalyst adapted to be carried by said inert granular material, said catalyst consisting essentially of at least one salt from a group of salts comprising the reaction products of weak bases and the lower aliphatic and aromatic hydrocarbon sulfonic acids, with said catalyst being present in an amount of about 5% to about 25% by weight of the weight of said resin component.

4,383,099

ENCAPSULANT MATERIAL SUITABLE FOR USE UNDER CONDITIONS OF PROLONGED VACUUM

Agathangelos Hajimichael, Wembley; Sidney Hopper, Lightwater, and Peter K. Smith, Ashford, all of England, assignors to E M I Limited, Hayes, England

Filed Jul. 27, 1981, Ser. No. 287,150
Int. Cl.³ C08G 18/48, 18/75, 18/76
U.S. Cl. 528—60 **15 Claims**

1. An encapsulant material suitable for use in space applications which comprises a polyurethane formed from the reaction of a polyoxypropylene glycol of molecular weight between 3500 and 5000 and a chemical structure such that the ratio of molecular weight to hydroxyl number is at least 90 with a molar excess of a diisocyanate selected from the group consisting of toluene diisocyanate and isophorone diisocyanate under conditions that will give a prepolymer containing from 3.5% to 5.0% of free isocyanate groups, with an equivalent amount of a triol or diol having a molecular weight of from 90 to 190, said polyurethane when cured having according to the European Space Research and Technology Centre (ESTEC)

specification a total mass loss not greater than 1% and condensible volatiles content of not greater than 0.1% combined with a vibration performance characterised by a Q of from 4 to 15 and a peak frequency of 200 to 400 Hz when vibrated at 1 g.

15. A method of encapsulating an object or apparatus in a polyurethane material which material has a total mass loss of not greater than 1% and a condensible volatiles content of not greater than 0.1% combined with a vibration performance characterised by a Q of from 4 to 15 and a peak frequency of 200 to 400 Hz when vibrated at 1 g which method comprises reacting in situ while in contact with said object or apparatus to be encapsulated a prepolymer, formed from the reaction of a polyoxypropylene glycol of molecular weight between 3500 and 5000 and a chemical structure such that the ratio of molecular weight to hydroxyl number is at least 90 with a molar excess of a diisocyanate selected from the group consisting of toluene diisocyanate and isophorone diisocyanate under conditions that will give a prepolymer containing from 3.5% to 5.0% of free isocyanate groups, with an equivalent amount of a triol or diol having a molecular weight of from 90 to 190, and thereafter curing the resultant reaction product.

4,383,100

POLYURETHANES FROM OLIGOMERIC FORMAL DIOLS OF THF COPOLYMER GLYCOLS

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 188,877, Sep. 19, 1980, Pat. No. 4,273,693. This application Jan. 19, 1982, Ser. No. 340,828

Int. Cl.³ C08G *18/48;* **C07C** *42/30*

U.S. Cl. 528—76 **6 Claims**

1. A polyurethane which is the reaction product of

(a) an oligomeric formal diol made by coupling segments of copolymers of tetrahydrofuran and an alkylene oxide whose ring contains 2 or 3 carbon atoms with formaldehyde, the diol having a number average molecular weight of 1200–12000,

(b) an organic polyisocyanate, and

(c) a chain extender.

4,383,101

LINEAR HYDROQUINONE PHENOXY POLYMERS AND PROCESS

Eric G. Olsen, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 108,722, Dec. 31, 1979, Pat. No. 4,267,301. This application Feb. 23, 1981, Ser. No. 237,174

Int. Cl.³ C08G *59/06*

U.S. Cl. 528—93 **27 Claims**

1. Process for the preparation of high molecular weight hydroquinone phenoxy polymer from at least 21 mole percent hydroquinone substituted with one or two substituents selected from chlorine or an alkyl group containing 1–4 carbon atoms and mixtures thereof, 0 to 79% mole percent hydroquinone and an epihalohydrin, said process comprising reacting the hydroquinone compounds with about 0.95 to about 1.05 equivalents of an epihalohydrin in the presence of about 1.0 to 1.1 equivalents of a base and of about one to seven parts by weight solvent for said polymer per part polymer.

4,383,102

METHOD FOR PRODUCING A LOW VISCOSITY SPRAY POLYOL BY REACTING AN ALKYLENE OXIDE WITH THE REACTION PRODUCT OF A PHENOL, AN AMINE AND A SMALLER FORMALDEHYDE PORTION

Kenneth G. McDaniel, Round Rock, and George P. Speranza, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 29, 1982, Ser. No. 344,127

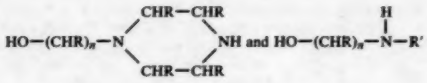
Int. Cl.³ C08G *67/00*

U.S. Cl. 528—107 **17 Claims**

1. A method for producing a low viscosity nitrogen-containing polyol suitable for use in sprayed, high density, rigid polyurethane foam, comprising the steps of

a. mixing a phenol, an amine and formaldehyde,

(1) the amine being selected from the group consisting of ammonia and alkanolamines having the formula:



where R is selected from the group consisting of hydrogen and C_1–C_4 alkyl, R′ is selected from the group consisting of hydrogen, C_1–C_4 alkyl and —(CHR-)$_n$—OH and n is a positive integer having a value of two to five,

(2) the molar ratio of phenol to amine being about 1:2, and

(3) the molar ratio of formaldehyde to phenol being from about 1.25:1 to about 1.75:1;

b. heating the resulting mixture at a temperature within the range of from about 50 to 150° C. for a period of time sufficient to reduce the formaldehyde content to no more than about 1 wt.%;

c. stripping the water from the reaction product;

d. adding separately or together at least two different alkylene oxides selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, styrene oxide, and glycidol to said stripped reaction product at a temperature within the range of about 30 to 200° C.; and

e. recovering a nitrogen-containing polyol having a hydroxyl number of from about 250 to about 900, a nitrogen content of from about 1 to about 15 wt.% and a viscosity of 15,000 centipoise or less at 25° C.

4,383,103

AMINOALKOXYAMIDES AND EPOXY RESIN COMPOSITIONS CONTAINING SAME

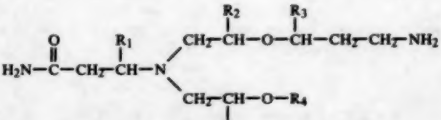
Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 8, 1982, Ser. No. 346,720

Int. Cl.³ C08G *59/54*

U.S. Cl. 528—111 **9 Claims**

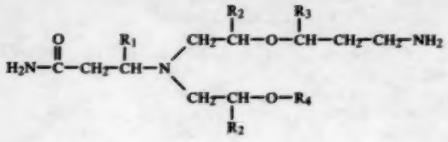
1. Aminoalkoxyamides having the following formula:



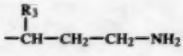
wherein R_4 is selected from H or

and R_1, R_2 and R_3 are all independently selected from H or a lower alkyl group having from 1 to about 6 carbon atoms.

3. An epoxy resin composition comprising an epoxy resin and at least one epoxy resin curing agent of the formula:



wherein R_4 is selected from H or



and R_1, R_2 and R_3 are all independently selected from H or a lower alkyl group having from 1 to about 6 carbon atoms.

4,383,104

PHENOLIC CHELATE RESIN, PROCESS FOR PRODUCING THE SAME, AND METHOD OF RECOVERING HEAVY METAL IONS WITH THE SAME

Akio Sasaki, Jyoyo, and Yoshiaki Echigo, Uji, both of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Mar. 23, 1981, Ser. No. 246,770

Claims priority, application Japan, Mar. 22, 1980, 55-36358

Int. Cl.³ C08G 8/16, 8/18

U.S. Cl. 528—148 **11 Claims**

1. A phenolic chelate resin having a chelate-forming group, wherein hydrogen atoms in a primary or secondary alkylamino group introduced in a phenol nucleus are substituted by a methylenephosphonate group.

4,383,105

POLYIMIDE-ESTERS AND FILAMENTS

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

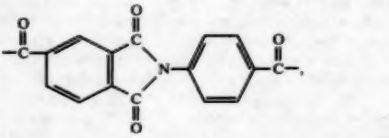
Filed Dec. 28, 1981, Ser. No. 334,891

Int. Cl.³ C08G 73/16

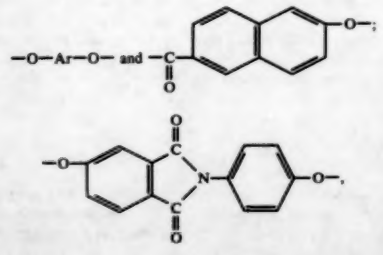
U.S. Cl. 528—170 **8 Claims**

1. A melt-spinnable polyimide-ester capable of forming an optically anisotropic melt consisting essentially of units having structural formulas as follows:

I.



II.



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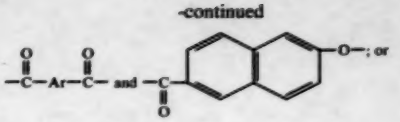
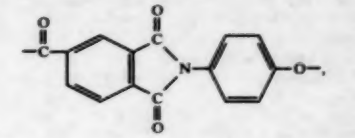
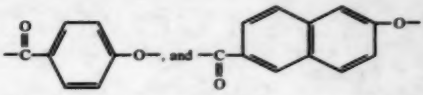
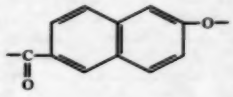


III.

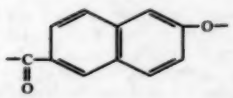




such that in I and II, unit



is present in an amount of from 10 to 30 mole percent, and the dioxy units and dicarbonyl units are present in substantially equimolar amounts with Ar in I being chloro- or methyl-p-phenylene, and Ar in II being p-phenylene; and such that in III, unit



is present in an amount of from 40 to 60 mole percent, with each of the other units being present in an amount of from 20 to 30 mole percent.

4,383,106

HIGH MELT STRENGTH ELASTOMERIC COPOLYESTERS

William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 21, 1981, Ser. No. 304,273

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ C08G 63/66, 63/18

U.S. Cl. 528—295.3 **11 Claims**

1. A high melt strength, elastomeric, copolyester, comprising:

the polymeric reaction product of

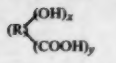
(a) terephthalic acid or a 1 to 4 carbon atom dialkyl ester thereof;

(b) a dimer acid;

(c) a poly(tetramethylene oxide)glycol having a molecular weight of from about 600 to about 2,000;

(d) 1,4-butane diol; and

(e) a chain branching agent having the formula



where R is an alkyl having from 4 to 20 carbon atoms, a cycloalkyl having from 4 to 10 carbon atoms, an aromatic having from 6 to 10 carbon atoms, or an alkyl substituted aromatic having from 7 to 15 carbon atoms, where x is 0 to at least 3 and up to 6, where y is 0 to at least 3 and up to 6, and where x plus y is at least 3 and up to 12,

the amount of said terephthalic acid or said dialkyl ester thereof ranging from about 85.0 mole percent to about 99.9 mole percent, and the amount of said dimer acid ranging from about 0.1 mole percent to about 15.0 mole percent, said percentages being based upon the total number of moles of said acid constituents or reactive equivalents thereof,

the amount of said poly(tetramethylene oxide)glycol ranging from about 2.0 to about 12.0 mole percent and the amount of said 1,4-butane diol ranging from about 88.0 mole percent to about 98.0 mole percent, and

additionally including a molar excess of said 1,4-butane diol ranging from about 5.0 to about 120 percent, said mole percentages of said excess 1,4-butane diol being based upon the total number of moles of said glycol and said 88.0 to said 98.0 mole percent of said 1,4-butane diol so that the molar ratio of all of said glycol constituents to all of said acid constituents or their reactive equivalents ranges from about 1.05 to about 2.2, and

from about 0.05 to about 1.0 parts by weight per 1,000 parts of said copolyester produced of said chain branching agent.

4,383,107

MIXTURE CONTAINING N-CYANOLACTAM FOR THE PREPARATION OF NITROGEN-CONTAINING POLYADDUCTS

Friedrich Lohse, Oberwil; Dieter Trachsler, Kaiseraugst, both of Switzerland, and Claude Jeannerat, Hegenheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,560

Claims priority, application Switzerland, Aug. 28, 1980, 6484/80

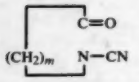
Int. Cl.³ C08G *69/14*

U.S. Cl. 528—323 **10 Claims**

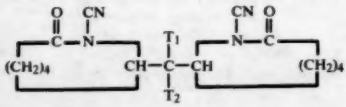
1. A mixture for the preparation of a crosslinked nitrogen-containing resinous polyadduct, which comprises

(a) an N-cyanolactam of the formula I or II

(I)



(II)



in which m is an integer from 2 to 11, the methylene carbon atoms are unsubstituted or are substituted by a total of one or two methyl or ethyl groups, and T_1 and T_2 independently of one another are hydrogen or methyl, and

(b) a monomeric or oligomeric organic compound having at least 2 C atoms and at least 2 amino groups or at least one amino group and one hydroxyl group.

4,383,108

PRODUCTION OF EMULSION-POLYMERIZED BUTADIENE RUBBER IN POWDER FORM

August H. Jorgensen, Jr., Rocky River, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 29, 1981, Ser. No. 288,226

Int. Cl.³ C08J *3/16*

U.S. Cl. 528—485 **8 Claims**

1. In the production of solid butadiene rubber by polymerizing a monomeric material comprising predominantly a butadiene-1,3hydrocarbon while emulsified in an aqueous medium thereby to form a latex containing dispersed microscopic particles of said rubber, coagulating the latex to form a solid coagulum of said rubber and separating said coagulum as a dry powder from the surrounding coagulum, the method which comprises the steps, in combination, of (a) using sodium lauryl sulfate as emulsifier in the polymerization to form the latex and (b) admixing the latex with an aqueous coagulating solution composed of dissolved magnesium sulfate and aluminum sulfate in a molar ratio of magnesium to aluminum in the range of 0.3/1 to 2/1, thereby to produce a solid coagulum in the form of a powder whose particles are from about 0.3 to about 4 millimeters in greatest dimension.

4,383,109

LINCOMYCIN NUCLEOTIDES

Alexander D. Argoudelis, and David W. Stroman, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1981, Ser. No. 255,542

Int. Cl.³ C07H *15/16*; C12P *19/30, 19/32*

U.S. Cl. 536—16.5 **29 Claims**

1. The 3-(5'-ribonucleotide) of a compound having the formula

wherein R_1, which can be singly or multiply substituted in any position of the pyridine ring not already substituted by R_2, is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl and substituted cycloalkyl of from 3 to 8 carbon atoms inclusive, substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, $-(CH_2)_n-OH$, $-(CH_2)_n-NR_4R_5$, and branched chain isomers thereof, wherein n is an integer of from 1 to 8, inclusive, R_4 and R_5 are H or alkyl of from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof; wherein R_2, which can be singly substituted in any position of the pyridine ring not already substituted by R_1, is

and X is the amino function of a compound selected from the group consisting of 7(S)-halo-methyl 1-thio-α-lincosaminide and 7(R)-halo-methyl 1-thio-α-lincosaminide; and the pharmaceutically acceptable salts thereof.

4,383,110

PROCESS FOR PURIFYING AND SEPARATING VITAMIN B_{12}

Tatsuo Kinoshita, Kawasaki; Yutaka Oguchi, Tokyo; Kenji Maruhashi, Yokohama; Ichiro Kojima, Yokosuka; Noboru Endoh, Tokyo, and Tetsuo Satoh, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

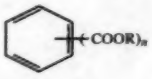
Filed Nov. 24, 1981, Ser. No. 324,633

Claims priority, application Japan, Nov. 29, 1980, 55-167374; Nov. 29, 1980, 55-167375

Int. Cl.³ C07H *15/12*

U.S. Cl. 536—28 **3 Claims**

1. A process for separating vitamin B_{12} in pure form, which comprises bringing a vitamin B_{12}-containing liquid containing impurities into contact with a resin selected from the group consisting of (A) a divinylbenzene/styrene copolymer having a mode pore diameter of at least about 200 A and a total pore volume of more than 0.6 ml/g, and (B) a copolymer of divinylbenzene/styrene/an unsaturated alkyl ester of an aromatic polycarboxylic acid represented by the formula



wherein R represents a C_3–C_{10} unsaturated alkyl moiety having a carbon-carbon double bond and n is 2 or 3, said copolymer (B) having a surface area of at least about 700 m^2/g, to cause vitamin B_{12} to be adsorbed to said resin, and eluting the vitamin B_{12} with an eluent, and collecting the active eluate.

4,383,111

PROCESSED STARCH, PROCESS FOR PREPARING SAME AND USE OF SAME IN MEDICINES

Kimihiko Takeo; Tooichiro Hirano, and Fumihiko Sato, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1981, Ser. No. 272,253

Claims priority, application Japan, Jun. 12, 1980, 55-79266

Int. Cl.³ C08B *31/00*

U.S. Cl. 536—102 **6 Claims**

1. A process for the preparation of processed starches, having a swelling property but exhibiting a low solubility in cold water, which comprises the steps of:

adding water and an optional organic solvent to green terrestrial starch to form a dispersion having a solid component concentration of not more than 30% by weight;

heating the dispersion at a temperature higher than 50° C. but not exceeding the temperature of 10° C. higher than the gelatinization-starting temperature of the starch particles in the dispersion, whereby the green terrestrial starch granule is swollen without destruction of the shell film structure thereof and rendered non-birefringent; and then

drying the dispersion without destruction of said shell film structure.

4,383,112

CHIRAL AMINO-ALCOHOL COMPLEXES

Dale A. Laidler, Huntington, and David J. Milner, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

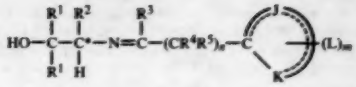
Filed Jul. 8, 1980, Ser. No. 167,158

Claims priority, application United Kingdom, Jul. 13, 1979, 7924519

Int. Cl.³ C07D *213/00, 215/00*

U.S. Cl. 542—414 **14 Claims**

1. A chiral Schiff base according to the general formula:



wherein

C* is an asymmetric carbon atom,

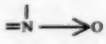
R^1 and R^2, which may be the same or different, are alkyl, aralkyl, aryl or alkaryl,

R^3 is hydrogen, alkyl, aralkyl, aryl or alkaryl,

R^4 and R^5, which may be the same or different, are hydrogen or lower alkyl, or where n is 1, CR^4R^5 may constitute a chain of 4 carbon atoms to n form a fused bicyclic ring system with the ring

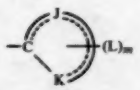
J is a chain of 3 or 4 atoms chosen from the group consisting of —C=C—C=C—, —C=N—C=C—, —C=C—N=C—, —N=C—C=C—, —S—C=C—, —O—C=C—, —NH—C=C—, =C—C=C— and =C—N=C—, which chain with the group C K forms a substantially planar cyclic conjugated system containing $(4z+2)\pi$ electrons where z is a positive integer,

K is nitrogen,



or —NH—,

each L, which may be the same or different, represents a substituent attached to a carbon atom in the chain J and is selected from the group consisting of hydrogen, alkyl, aralkyl, alkaryl, aryl, hydroxy, OR^6, $OCOR^6$, CHO, COR^6, CO_2H, CO_2R^6, CN, $CONH_2$, NH_2, NHR^6, NR_2^6, $NHCOR^6$, NO_2, SH, SR^6, SOR^6, SO_3H, SO_3R^6 and a halogen atom, where R^6 is alkyl, aralkyl or aryl, with the proviso that where n is O, the L's on two adjacent atoms in the chain J may constitute a chain of 4 carbon atoms to form, together with the ring



a fused bicyclic ring system,

n is 0, 1 or 2, and

m is equivalent to the number of carbon atoms in the chain J.

4,383,113
AGRICULTURAL SULFONAMIDES

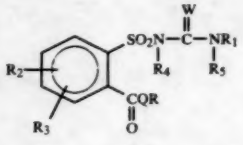
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 98,781, Nov. 30, 1979, which is a continuation-in-part of Ser. No. 29,281, Apr. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 15,341, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 965,070, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 910,965, May 30, 1978, abandoned. This application Jun. 1, 1981, Ser. No. 268,704

Int. Cl.[3] C07D *251/18, 251/44, 251/46, 251/52*

U.S. Cl. 544—211 66 Claims

1. A compound of the formula



wherein

when Q is O or S, then

R is C_1–C_{12} alkyl; C_3–C_{10} alkenyl; C_3–C_{10} alkynyl; C_2–C_6 alkyl substituted with 1–4 substituents selected from (a) 0–3 atoms of F, Cl or Br, (b) 0–2 OCH_3 groups or (c) 0–1 cyano groups;

R is also CH_2CN; $CH(R_7')CO_2CH_3$; $CH(R_7')CO_2C_2H_5$; C_3–C_6 alkenyl substituted with 1–3 atoms of F, Cl or Br;

R is also C_3–C_6 alkynyl substituted with one of F, Cl or Br;

R is also C_5–C_8 cycloalkyl; C_5–C_8 cycloalkenyl; C_5–C_6 cycloalkyl substituted with (a) OCH_3, (b) C_2–C_4 alkyl, (c) F, Cl or Br or (d) 1–4 CH_3 groups;

R is also C_4–C_{10} cycloalkylalkyl; C_4–C_8 cycloalkylalkyl substituted with 1–2 CH_3 groups;

R is also C_7–C_{10} bicycloalkyl; C_7–C_{10} bicycloalkenyl; C_{10} tricycloalkyl; C_{10} tricycloalkenyl;

R_7' is H or CH_3;

A is O or S;

A_1 is O, S or SO_2;

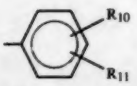
when

Q is O, then additional values of

R are H; M; $CH_2CH_2OR_7$; $CH_2CH_2CH_2OR_7$; $CH(CH_3)CH_2OR_7$; CH_2OR_8'; $(CH_2CH_2O)_{n'}R_8$; $(CH(CH_3)CH_2O)_{n'}R_8$; $CH_2CH_2S(O)_{0,2}R_{12}$; $CH_2CH_2CH_2S(O)_{0,2}R_{12}$;

R_7 is CH_2CH_3, $CH(CH_3)_2$, phenyl, CH_2CH_2Cl or CH_2CCl_3;

R_8' is CH_3, CH_2CH_3, $CH(CH_3)_2$, CH_2CH_2Cl, CH_2CCl_3, phenyl,



$CH_2CH_2OCH_3$ or $CH_2CH_2OCH_2CH_3$;

R_8 is CH_3, CH_2CH_3, $CH(CH_3)_2$, phenyl, CH_2CH_2Cl or CH_2CCl_3;

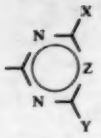
R_{10} and R_{11} are independently H, C_1–C_3 alkyl, Cl, Br, OCH_3 or OC_2H_5;

R_{10} and R_{11} may be taken together to form $—(CH_2)_3—$, $—(CH_2)_4—$, $—OCH_2O—$ or $—OCH_2CH_2O—$;

n' is 2 or 3;

R_{12} is CH_3, CH_2CH_3, $CH(CH_3)_2$ or phenyl;

R_1 is



R_2 is H, Cl, Br, F, C_1–C_3 alkyl, NO_2, SO_2CH_3, OCH_3, SCH_3, CF_3, $N(CH_3)_2$, NH_2 or CN;

R_3 is H, Cl, Br, F or CH_3;

R_4 is H or CH_3;

R_5 is H, CH_3 or OCH_3;

M is an alkali metal;

W is O or S;

X is H, Cl, CH_3, OCH_3, OCH_2CH_3 or $OCH_2CH_2OCH_3$;

Y is H; F; Cl; Br; C_1–C_4 alkyl; C_1–C_4 alkyl substituted with (a) OCH_3, (b) OC_2H_5, (c) CN, or (d) 1–3 atoms of F, Cl or Br;

Y is also C_3–C_4 alkenyl; $CH_2C{=}CR_{13}$; $A(CH_2)_{n'}A_1(C_1$–C_3 alkyl);

SCN; N_3; $NR_{16}R_{17}$; OR_{14} or SR_{15};

R_{13} is H, CH_3 or CH_2Cl;

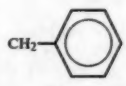
n', A and A' are as previously defined;

R_{16} is H or CH_3;

R_{17} is H, OCH_3, C_1–C_6 alkyl, C_1–C_4 alkyl substituted with CN;

R_{17} is also C_3–C_4 alkenyl, C_3–C_6 cycloalkyl or C_2–C_3 alkyl substituted with (a) OCH_3 or (b) OC_2H_5;

R_{14} is C_1–C_4 alkyl; C_2–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br; C_1–C_4 alkyl substituted with CN; C_3–C_4 alkenyl; $CH_2C{=}CR_{13}$; or



R_{15} is C_1–C_4 alkyl, allyl, propargyl or C_1–C_2 alkyl substituted with CN; and

Z is N; provided that

(a) the total number of carbon atoms of R is less than or equal to 13;

(b) when Y is greater than or equal to 4 carbon atoms, R is equal to or less than 4 carbon atoms; and

(c) when X is Cl, then Y is Cl and when X and Y are both H, then R is less than or equal to 4 carbon atoms.

4,383,114
ADENOSINE DEAMINASE RESISTANT ANTIVIRAL PURINE ARABINONUCLEOSIDES

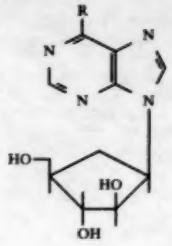
Robert Vince, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 181,382, Aug. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 1,072, Jan. 5, 1979, Pat. No. 4,268,672, which is a continuation-in-part of Ser. No. 766,947, Feb. 9, 1977, Pat. No. 4,136,562. This application Sep. 11, 1981, Ser. No. 301,399

Int. Cl.[3] C07D *473/32;* A61K *31/52*

U.S. Cl. 544—277 5 Claims

1. The adenosine deaminase resistant antiviral purine arabinonucleoside analog 9-[α-(2α,3β-dihydroxy-4α-(hydroxymethyl)cyclopentyl)]-6-substituted purine having the formula:



and derivatives thereof, wherein R is selected from the group consisting of amino, hydroxyl, mercapto, methylmercapto, halogen and substituted amino:

wherein R′ and R″ may be the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl and phenyl.

4,383,115

IMINO-ALKYL AND AMINO-NITRILE CYANO-GUANIDINES

Pierre J. Baudet, 15 ch. de Passoret, Geneva 1227, Switzerland

PCT No. PCT/CH80/00021, § 371 Date Oct. 14, 1980, § 102(e) Date Oct. 8, 1980, PCT Pub. No. WO80/01694, PCT Pub. Date Aug. 21, 1980

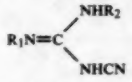
PCT Filed Feb. 14, 1980, Ser. No. 197,985

Claims priority, application Switzerland, Feb. 14, 1979, 1404/79

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—342 **1 Claim**

1. A cyanoguanidine having the structural formula:



characterized by the imino-alkyl and amino-nitrile structure wherein R_1 comprises a 2-((4-methyl-5-imidazolyl)thiomethyl)ethyl radical, and R_2 comprises a methyl radical.

4,383,116

PROCESS FOR PRODUCING 4-BENZOYLPYRAZOLES

Takahiro Haga, Kusatsu; Tetsuji Nishikawa, Moriyama; Toshio Nakajima, Kusatsu; Kohji Minamida, Shiga, and Masaru Maeda, Hikone, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

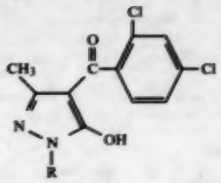
Filed Mar. 4, 1981, Ser. No. 240,313

Claims priority, application Japan, Mar. 11, 1980, 55-29829

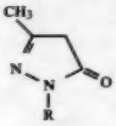
Int. Cl.³ C07D *231/20*

U.S. Cl. 548—367 **8 Claims**

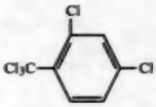
1. A process for producing a 4-benzoyl-5-hydroxypyrazole represented by the formula



wherein R is a hydrogen atom or a lower alkyl group, which comprises a condensation reaction of a pyrazolone represented by the formula



wherein R is the same defined as above, and a benzotrichloride represented by the formula



followed by a hydrolysis reaction.

4,383,117

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

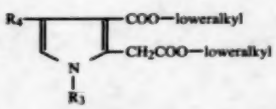
James T. F. Kao, and Everett M. Marlett, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,156

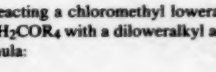
Int. Cl.³ C07D *207/34*

U.S. Cl. 548—531 **6 Claims**

1. In a process for preparing a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonylpyrrole-2-acetate corresponding to the formula:



by reacting a chloromethyl loweralkyl ketone of the formula $ClCH_2COR_4$ with a diloweralkyl acetone dicarboxylate of the formula:



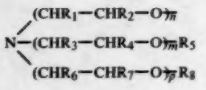
and an anhydrous loweralkylamine of the formula R_3NH_2, in which formulas R_3 and R_4 represent loweralkyl, the improvement which comprises contacting the reactants in a single-phase non-aqueous reaction medium.

4,383,118
PREPARATION OF GLYCIDYL POLYETHERS OF POLYPHENOLS

Jean-Louis Locatelli, Vienne, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 25, 1981, Ser. No. 296,213
Claims priority, application France, Aug. 27, 1980, 80 18563
Int. Cl.³ C07D 301/28, 301/00
U.S. Cl. 549—517 24 Claims

1. A process for the preparation of glycidyl polyethers of polyphenols, comprising reacting at least one alkali metal salt of a polyphenol with at least one 1-halogeno-2,3-epoxyalkane, in an anhydrous and essentially aprotic reaction medium, and in the presence of a catalytically effective amount of a catalyst which comprises a cross-linked organic polymeric support, said support having a plurality of catalytically active functional groups covalently coupled thereto, the free valence of said functional groups having the structural formula:



(I)

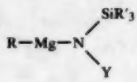
in which R_1, R_2, R_3, R_4, R_6 and R_7, which are identical or different, are each a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms, R_5 and R_8, which are identical or different, represent a hydrogen atom, an alkyl or cycloalkyl radical having from 1 to 12 carbon atoms, a phenyl radical or radical $C_6H_5—C_2H_{2q}—$ or $C_qH_{2q+1}—C_6H_4—$, in which q ranges from 1 to about 12, and n, m and p, which are identical or different, range from 1 to 10.

4,383,119
ORGANOMAGNESIUM COMPOUNDS

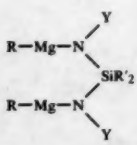
Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, both of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Jun. 4, 1982, Ser. No. 384,885
Int. Cl.³ C07F 7/10
U.S. Cl. 556—412 8 Claims

1. The new compounds represented by the formulas:



(I)



(II)

in which R is a straight or branched chain alkyl group of about 1–18 carbon atoms, aryl groups of about 6 to 14 carbon atoms, and the R groups are the same or different and may be unsubstituted but may, R′ is R or hydrogen, Y groups is R or —SiR′$_3$, all R's are the same or different, all R groups are the same or different and all Y are the same or different.

4,383,120
THERMAL CATALYTIC HYDROSILYLATION OF CARBONYL COMPOUNDS

Ronald L. Yates, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 284,034, Jul. 17, 1981, Pat. No. 4,322,654. This application Nov. 12, 1981, Ser. No. 320,237
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—470 11 Claims

1. A process comprising contacting a carbonyl compound with an organosilicon hydride under reaction conditions to form a silyl ether in the presence of a catalytic amount of at least one iron group transition metal carbonyl coordination compound and elevated temperature.

4,383,121
PROCESS FOR PURIFYING MONOCHLOROACETIC ACID

Ryoji Sugamiya, Yachio; Kazuto Nakamaru, Kashiwa; Keizo Takegami, Kamakura; Koji Miwa, Yokohama, and Minoru Morita, Kodaira, all of Japan, assignors to Tsukishima Kaikai Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1981, Ser. No. 223,946
Claims priority, application Japan, Jan. 16, 1980, 55-2638
Int. Cl.³ C07C 51/43
U.S. Cl. 562—602 2 Claims

1. A process for crystallizing monochloroacetic acid, which comprises adding 5–25% by weight of water to a mixture containing monochloroacetic acid and dichloroacetic acid as the main components on the basis of sum total of monochloroacetic acid, dichloroacetic acid, and water, and subjecting the mixture to adiabatic cooling at a pressure of 133–2,660 Pa.

4,383,122
PROCESS FOR PREPARING α-HYDROXYALDEHYDE

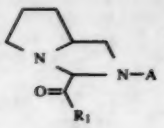
Teruaki Mukaiyama, Tokyo; Yoji Sakito, Musashino, and Masatoshi Asami, Yokohama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 89,356, Oct. 30, 1979, Pat. No. 4,337,346. This application Apr. 27, 1981, Ser. No. 257,587
Claims priority, application Japan, Nov. 2, 1978, 53-135511; Nov. 6, 1978, 53-137147; Jun. 4, 1979, 54-70365; Jun. 4, 1979, 54-70366; Jun. 4, 1979, 54-70367
Int. Cl.³ C07C 45/56
U.S. Cl. 568—436 6 Claims

1. A process for preparing an optically active or racemic α-hydroxyaldehyde represented by the general formula (2),

(2)

wherein R_1 represents a C_6–C_{14} aryl group, C_1–C_{10} alkyl group, C_3–C_{10} alkenyl group, C_2–C_{10} alkynyl group, C_7–C_{14} aralkyl group, or a group containing a C_1–C_4 alkoxy or silyloxy group in the organic portion of said groups and R_2 represents a C_1–C_{10} alkyl group, C_2–C_{10} alkenyl group, C_2–C_{10} alkynyl group, C_7–C_{14} aralkyl group, C_6–C_{14} aryl group, or a group containing a C_1–C_4 alkoxy or silyloxy group in the organic portion of these groups, which comprises allowing an optically active or racemic compound represented by the general formula (1),



(I)

(wherein A represents a C_6–C_{14} aryl group or a C_1–C_4 alkyl or alkoxy group- or halogen-substituted C_6–C_{14} aryl group and R_1 is as defined above) to react with a Grignard reagent represented by the formula, R_2MgX (wherein R_2 is as defined above and X is a halogen atom), and thereafter hydrolyzing the reaction product.

4,383,123

MANUFACTURE OF AQUEOUS FORMALDEHYDE

Theodore V. Ferris, and Richard C. Kmetz, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 8, 1981, Ser. No. 309,623

Int. Cl.³ C07C 47/052

U.S. Cl. 568—473 **18 Claims**

1. A process for the manufacture of an aqueous solution of formaldehyde comprising the steps of:

(a) oxidatively dehydrogenating methanol with air in the presence of a silver or copper catalyst and steam at elevated temperature;

(b) absorbing the reaction product in an absorber comprising one or more absorption stages in series to form an aqueous formaldehyde solution containing free and combined methanol; and

(c) stripping methanol from the aqueous formaldehyde solution with off-gas from the absorber in counter-current flow in a stripping column comprising at least about 1.5 theoretical transfer units for methanol stripping, the stripping being carried out at a temperature and at a ratio of stripping off-gas to aqueous formaldehyde to provide a concentration of condensible vapors of aqueous methanolic formaldehyde in the gas emerging from the stripping column of no more than about 50 mol percent.

4,383,124

METHOD FOR THE PREPARATION OF ALDEHYDES

Theodorus F. M. de Graaf, Beek, and Hubertus J. A. Delahaye, Voerendaal, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 27, 1981, Ser. No. 248,438

Claims priority, application Netherlands, Mar. 29, 1980, 8001878

Int. Cl.³ C07C 45/51

U.S. Cl. 568—485 **9 Claims**

1. In processes for the preparation of aldehydes by dehydrogenation of monovalent primary alcohols, having from 2 to 20 carbon atoms, in the gas phase by means of a copper-containing catalyst, the improvement consisting essentially in effecting said dehydrogenation during an initial reaction period using a gas phase mixture of an inert gas and said alcohol and thereafter effecting subsequent dehydrogenation for a second extended reaction period of time using a mixture of said alcohol with an inert gas together with hydrogen.

4,383,125

ALDEHYDE-ETHERS

Norman Harris, Stockton-on-Tees; Alan J. Dennis, Middlesbrough, and George E. Harrison, Billericay, all of England, assignors to Davy McKee (Oil & Chemicals) Limited, London, England

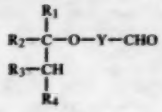
Filed Apr. 11, 1980, Ser. No. 139,591

Claims priority, application United Kingdom, Apr. 11, 1979, 7912849

Int. Cl.³ C07C 47/198

U.S. Cl. 568—496 **5 Claims**

1. Aldehyde-ethers of the general formula:



(I)

wherein R_1 and R_2 each, independently of the other, represent a C_1 to C_4 alkyl radical, and R_3 and R_4 each, independently of the other, represent a hydrogen atom or a C_1 to C_3 alkyl radical, or wherein R_1 represents a C_1 to C_4 alkyl radical, R_2 and R_3 together with the carbon atoms to which they are attached form a 5-membered or 6-membered cycloaliphatic ring, and R_4 represents a hydrogen atom or a C_1 to C_3 alkyl radical, and wherein Y represents $—CH_2—CH_2—CH_2—$ or $—CH_2—CH(CH_3)—$.

4,383,126

PREPARATION OF MONOALKYL ETHERS OF HYDROXYPHENOLS

Gerhard Büttner, Pulheim; Artur Judat, Langenfeld; Udo Allenbach, Cologne, and Manfred Lenthe, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

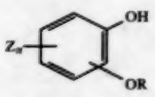
Filed Oct. 26, 1981, Ser. No. 315,126

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043230

Int. Cl.³ C07C 41/16

U.S. Cl. 568—650 **13 Claims**

1. A process for the preparation of a monoalkyl ether of a hydroxyphenol of the formula



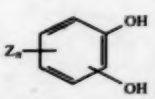
in which

Z each independently is hydrogen or a substituent which is stable under the reaction conditions,

R is lower alkyl, and

n is 1, 2, 3 or 4,

comprising reacting a hydroxyphenol of the formula



with an alkyl halide, alkyl sulphonate or aryl sulphonate alkylating agent of the formula

R—X

in which X is a halogen atom, or an alkylsulphonyloxy or arylsulphonyloxy radical, at a temperature from about 150° C. to 200° C. and in the presence of an alkali metal base or alkaline

earth metal base and of a diluent comprising a mono-alkyl ether of an alkylene glycol.

4,383,127

OXIDATION OF BENZOIC ACIDS TO PHENOLS

Paul C. van Geem, Spaubeek, and Antonius J. J. M. Teunissen, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 14, 1981, Ser. No. 283,148
Int. Cl.³ *C07C 37/01*
U.S. Cl. 568—801 **8 Claims**

1. A method for the preparation of a substituted or unsubstituted phenol by the gas phase oxidation of the corresponding substituted or unsubstituted benzoic acid, wherein said oxidation is conducted in the presence of a catalyst system consisting essentially of

(a) a copper component,

(b) at least one vanadium or silver component, and

(c) at least one lithium, sodium or magnesium component

and wherein the atomic ratios of said respective catalyst components (b) and (c) to copper are as follows:

(i) vanadium and or silver:copper at most 1:2,

(ii) lithium and or sodium and or magnesium; copper at most 5:1,

under process conditions wherein there is introduced into said gas phase for each 1 mole portion of said benzoic acid,

1–100 mole portions of water, and

0.05–5 mole portions of oxygen with said gas phase having a temperature of 450°–700° K. and a pressure of 50–2000 kPa.

4,383,128

PRODUCTION OF MONOFLUOROTRICHLOROETHANE

Michael Van Der Puy, and Ronald F. Piskorz, both of Cheektowaga, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

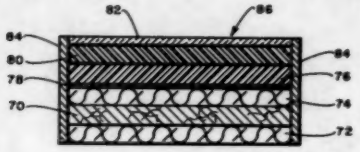
Division of Ser. No. 192,770, Oct. 1, 1980, abandoned. This application Oct. 22, 1981, Ser. No. 313,536
Int. Cl.³ *C07C 17/00*
U.S. Cl. 570—165 **4 Claims**

1. A method for the production of 1-fluoro-1,1,2-trichloroethane which comprises reacting trichloroethylene with hydrogen fluoride using about 1.5 to 3.5 moles of hydrogen fluoride per mole of trichloroethylene, and conducting the reaction in the presence of trifluoromethane sulfonic acid at a temperature range of about 50° to 150° C. for a residence time of about one-fourth hour to five hours.

4,383,129
SOLAR CELL ENCAPSULATION

Amitava Gupta, Pasadena; John D. Ingham, and Andre H. Yavrouian, both of La Crescenta, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 158,575, Jun. 11, 1980. This application May 21, 1982, Ser. No. 380,525
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—251 **3 Claims**

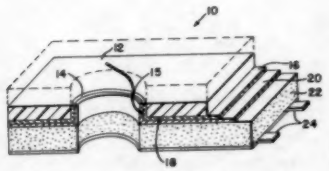


1. An encapsulated solar cell assembly comprising:
a substrate having an adhesive layer of poly (n-butyl) acrylate thereon;
a solar cell assembly adhered on one side to said adhesive layer;
an encapsulating layer of poly (n-butyl) acrylate on the other side of said solar cell assembly; and
an outer weather resistant layer.

4,383,130
SOLAR ENERGY CELL AND METHOD OF MANUFACTURE

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Alpha Solarco Inc., Cincinnati, Ohio

Filed May 4, 1981, Ser. No. 260,369
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—261 **25 Claims**



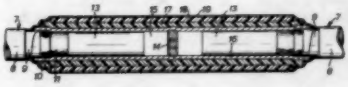
1. A method of forming a ribbon shaped silicon body comprising the steps of:
providing a base ribbon of relatively thin, high temperature resistant, electrically non conductive material; applying a layer of electrically conductive high temperature resistant material on both faces of said base ribbon and the edges thereof to form a composite ribbon;
depositing a coat of silicon over selected surface areas of the composite ribbon, said selected areas extending at least as far as the limits of the layer of said electrically conductive material, said silicon coat being up to approximately several atomic layers thick; passing said selected areas of said composite ribbon through a molten bath of silicon for growing a layer of silicon over said silicon coat to form a resultant ribbon; and
slicing said resultant ribbon lengthwise through said base ribbon to define two (2) ribbons having approximately half the thickness of said resultant ribbon, one (1) face of each ribbon being defined by the layer of silicon.

20. A photovoltaic cell comprising:
a base ribbon of relatively thin, high temperature resistant, electrically nonconductive material; a layer of electrically conductive high temperature resistant material on one (1) face of said base ribbon;
a thin layer of silicon up to several atoms thick deposited over at least said electrically conductive material, said electrically conductive material being layered between said deposited layer of silicon and said base ribbon;
a layer of single crystal silicon grown over said layer of silicon, said single crystal silicon having a controlled impurity in it which enables electrons to flow in the presence of solar radiation;
means for making an electrical connection from said electrically conductive material to the face of said base ribbon opposite the face over which said electrically conductive material is layered; and a grid of electrically conductive material overlying said single crystal silicon but permitting solar radiation to strike a substantial portion thereof thereby causing a flow of electrons which produces a current flow between the grid and the electrical connection means.

4,383,131
SHIELDED ELECTRICAL CABLE JOINTS AND TERMINATIONS AND SLEEVE AND METHOD FOR FORMING SAME

Robin J. T. Clabburn, Menlo Park, Calif., assignor to Raychem Limited, London, England

Filed Sep. 11, 1979, Ser. No. 74,336
Claims priority, application United Kingdom, Sep. 14, 1978, 36854/78; Oct. 2, 1978, 38874/78
Int. Cl.³ H02G *15/068, 15/188, 15/04, 1/14*
U.S. Cl. 174—73 R **96 Claims**



26. A shielded electrical cable termination comprising:
(a) a cable comprising a conductor, a dielectric layer which surrounds the conductor and which has been cut back to expose a length of the conductor, and an electrically conductive shield which surrounds the dielectric layer and which has been cut back to expose a length of the dielectric layer, and
(b) an enclosure comprising a tubular protective sleeve comprising an innermost stress grading layer having an at least partly resistive character and extending from the exposed conductor to overlap the cable shield, a conductive outer layer electrically contacting the stress grading layer at said overlap with the cable shield, and an insulating layer that separates the stress grading layer and the conductive layer in the region between said overlap and the exposed conductor.

66. A joint between two shielded electrical cables, comprising
(a) two cables, each comprising a conductor, a dielectric layer which surrounds the conductor and which has been cut back to expose a length of the conductor, and an electrically conductive shield which surrounds the dielectric layer and which has been cut back to expose a length of the dielectric layer, and
(b) an enclosure comprising a tubular protective sleeve comprising an innermost stress grading layer having an at least partly resistive character and extending from the exposed conductor to overlap each cable shield, a conductive outer layer electrically contacting the stress grading layer at said overlap with each cable shield, and an insulating layer that separates the stress grading layer and the conductive layer in the region between said overlap and the exposed conductor.

80. A protective sleeve for a cable termination or splice which comprises a dimensionally recoverable extruded tubular article having an innermost stress grading resistive layer, an

insulating inner layer and a conductive outer layer, wherein the insulating layer has a substantially uniform wall thickness along its entire length.

85. A method of protecting a termination of a shielded electrical cable against electrical stress, the cable comprising a conductor, a dielectric layer which surrounds the conductor, and an electrically conductive shield which surrounds the dielectric layer, the method comprising the steps of selecting for the termination a conforming enclosure comprising a protective sleeve comprising an insulating inner layer and a conductive outer layer, and placing the enclosure on the termination so that the insulating layer overlaps the cable shield by an amount at least equal to the thickness of the portion of the insulating layer overlying the cable, so that the conductive outer layer overlaps and is radially spaced apart from the cable shield, and so that electrical connection between the conductive outer layer and the cable shield is made at a point on the cable shield at a distance from the end of the cable shield at least equal to the thickness of the portion of the insulating layer overlying the cable shield end.

93. A method of protecting a joint between two shielded electrical cables against electrical stress, each cable comprising a conductor, a dielectric layer which surrounds the conductor, and an electrically conductive shield which surrounds the dielectric layer, the method comprising the steps of selecting for the joint a conforming enclosure comprising a protective sleeve comprising an insulating inner layer and a conductive outer layer, and placing the enclosure on the joint so that the insulating layer overlaps each cable shield by an amount at least equal to the thickness of the portion of the insulating layer overlying that cable, so that the conductive outer layer overlaps and is radially spaced apart from each cable shield, and so that electrical connection between the conductive outer layer and each cable shield is made at a point on that cable shield at a distance from the end of that cable shield at least equal to the thickness of the portion of the insulating layer overlying that cable shield end.

4,383,132

ELECTRIC HIGH VOLTAGE CABLE

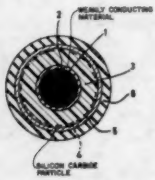
Petrus A. C. Bentvelsen, Den Hoorn; Frederik H. Kreuger, and Marinus K. Monteny, both of Delft, all of Netherlands, assignors to N.K.F. Kabel B.V., Netherlands

Continuation of Ser. No. 839,621, Oct. 5, 1977, abandoned, which is a continuation of Ser. No. 719,684, Sep. 2, 1976, abandoned, which is a continuation of Ser. No. 510,632, Sep. 30, 1974, abandoned. This application Oct. 2, 1980, Ser. No. 193,209

Claims priority, application Netherlands, Oct. 4, 1973, 7313629

Int. Cl.³ H01B *1/24, 9/04*

U.S. Cl. 174—120 SC **4 Claims**



1. An electric high voltage corona-resistant cable having at least one current conducting core, said core being surrounded along its entire length with an electrically insulating covering, and embedded in the surface of said covering remote from said core, a monolayer of homogeneously distributed particles of a voltage-dependent resistive material selected from the group consisting of silicon carbide and boron carbide, the size of each of said particles being approximately 20 to 200 u and from 10 to 20 mg of said particles being present per sq. cm. of said surface.

4,383,133

ABOVE-GROUND CONDUCTOR UNIT WITH CORONA NOISE REDUCING COVERING

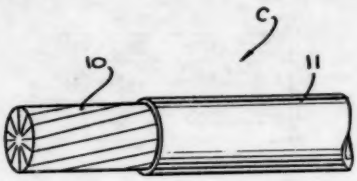
Attilio Lanfranconi, Gorgonzola, Italy, assignor to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Jun. 17, 1981, Ser. No. 274,461

Claims priority, application Italy, Jun. 30, 1980, 83632 A/80

Int. Cl.³ H01B *7/30, 7/34*

U.S. Cl. 174—127 **10 Claims**



1. A conductor unit for overhead lines for transmitting high voltage, alternating, electric current, said unit comprising one or more electric conductors and a thin, outermost, semi-conductive layer surrounding and in contact, at its inner surface, with the periphery of said conductor or of the plurality of conductors, said layer comprising a mixture of an insulating material, at least one conductive material in an amount of 5 to 40 parts by weight of the total weight of the mixture and at least one hydrorepellent material in an amount from 1 to 10 parts by weight of the total weight of the mixture, said unit having the characteristic that during rainfall or significant atmospheric humidity, corona noise is suppressed or is drastically reduced as compared to the same unit without a hydrorepellent material in the semi-conductive layer.

4,383,134

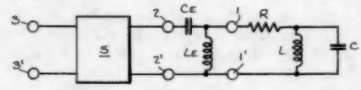
LOUDSPEAKER SYSTEMS

Daniel R. von Recklinghausen, Arlington, Mass., assignor to Electro Audio Dynamics, Inc., Great Neck, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,829

Int. Cl.³ H04R *3/12*

U.S. Cl. 179—1 D **3 Claims**



1. An improved loudspeaker system comprising the combination of:

a loudspeaker driver;

a closed box loudspeaker;

a passive electrical network for extending the loudspeaker response by performing a fourth-order transfer function;

means coupling said passive electrical network between said loudspeaker and the output of a loudspeaker driver;

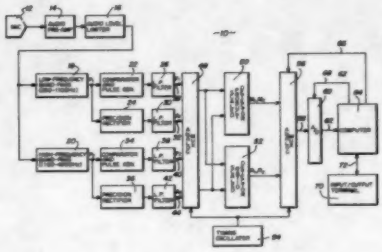
said network comprising a shunt coupled inductance and a series coupled capacitor; and

a combination of said shunt coupled inductance and said series coupled capacitor in parallel resonance with the loudspeaker voice coil resistance being tuned to about 0.569 times the half power frequency of the driver with a Q of about 0.890.

4,383,135
METHOD AND APPARATUS FOR SPEECH RECOGNITION

Brian L. Scott, and Lee H. Hardesty, both of Denton, Tex., assignors to Scott Instruments Corporation, Denton, Tex.

Filed Jan. 23, 1980, Ser. No. 114,724
Int. Cl.³ G10L 1/00
U.S. Cl. 179—1 SD **26 Claims**



2. A method of producing a template representing a speech signal, comprising the steps of:

extracting a plurality of frequency and amplitude signal components from the speech signal,

producing a first relational signal which is the product of two of the frequency signal components,

producing a second relational signal which is the product of two of the amplitude signal components,

producing a third relational signal which is the ratio of two of the frequency signal components,

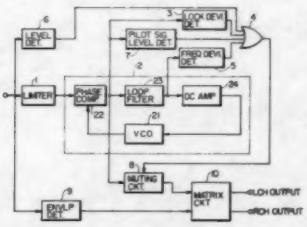
producing a fourth relational signal which is the ratio of two of the amplitude signal components, and

storing the relational signals as a template representing the speech signal.

4,383,136
MUTING CIRCUIT FOR AM STEREOPHONIC RECEIVER

Tatsuo Numata; Akira Nishioka, and Hitoshi Hirata, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,564
Claims priority, application Japan, Jun. 19, 1980, 55-83153; Jun. 19, 1980, 55-83155
Int. Cl.³ H04H 5/00
U.S. Cl. 179—1 GS **8 Claims**

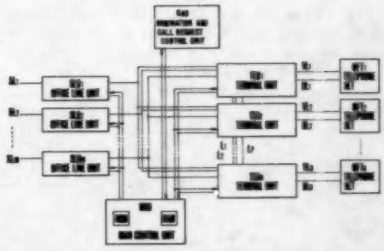


1. A muting circuit for an AM stereophonic receiver adapted for detecting a sub signal which is a difference signal between a first channel signal and a second channel signal with a phase-locked loop circuit upon reception of an AM stereophonic signal which is obtained by amplitude modulating a carrier, which is phase modulated with said sub signal, with a sum signal of said first and second channel signals, comprising: means for generating a first detection signal when the level of the AM stereophonic signal is lower than a predetermined value; means for generating a second detection signal upon detection of a non-locked state of said phase-locked loop circuit; frequency deviation detection means for generating a third detection signal when a free-running frequency of a voltage controlled oscillator in said phase-locked loop circuit and a frequency of the AM stereophonic signal are different in frequency by more than a predetermined value; means for generating a fourth detection signal when a stereo pilot signal for said AM stereophonic signal is not present; and muting means for muting a detected output signal in response to at least one of said first to fourth detection signals.

4,383,137
KEY TELEPHONE SYSTEM WITH MULTIPLE PROCESSOR CONTROL

Chuta Aikawa, Takaidohigashi; Noriyoshi Sanada, Kawagoe; Mitsuyoshi Murakami, Shiraoka; Junzo Kikuchi, Kawasaki, and Masaki Kuroda, Yokohama, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,568
Claims priority, application Japan, Jul. 3, 1979, 54-83485
Int. Cl.³ H04M 1/27; H04Q 3/54
U.S. Cl. 179—18 ES **28 Claims**



1. A key telephone exchange system for enabling connections between office lines and key telephone sets, said system comprising:

a main control unit provided with a processor;

a plurality of office line units provided for respective office lines, each office line unit including a processor, means for detecting a call request and means for seizing an office line;

a plurality of key telephone sets; and

a plurality of terminal units respectively connected to associated ones of said key telephone sets via voice lines and data lines, each terminal unit including a processor, means for transmitting and receiving data to and from a telephone set, and means for establishing connections;

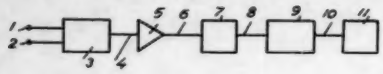
the processor of said main control unit including means for checking information signals of said office line units and of said terminal units, and means for controlling said office line units and said terminal units in accordance with the results of said checking for establishing connections between said office lines and said key telephone sets and between said key telephone sets.

4,383,138

METHOD AND APPARATUS FOR PROCESSING CODED INFORMATION RECEIVED THROUGH A TELEPHONE LINE DURING THE INTER-RINGING PERIODS

Marcelo Castro, and Horacio Castro, both of 5962 El Salvador St., Buenos Aires, Argentina

Filed May 15, 1980, Ser. No. 150,178
Claims priority, application Argentina, Mar. 31, 1980, 280506
Int. Cl.³ H04M 11/00
U.S. Cl. 179—84 C 45 Claims



36. A method for validating a telephone call between a calling party and a called party using a predesignated code in a telephone system of the Touch-Tone type, comprising the steps of:

(A) transmitting, from the calling party, signals corresponding to the phone number of the called party;

(B) establishing a ringing circuit to the called party in response to the signals corresponding to the phone number of the called party;

(C) transmitting consecutive ringing signals, separated by corresponding inter-ring periods, over the ringing circuit to the called party;

(D) transmitting, from the calling party during said corresponding inter-ring periods, at least one code signal; and

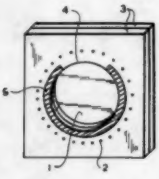
(E) comparing said at least one code signal with said predetermined code, and in response to a match therebetween, validating said telephone call in response to transmission of said at least one code signal.

4,383,139

ELECTROSTATIC ACOUSTIC CONVERTER

Peter K. Kanchev, Sofia, Bulgaria, assignor to Bulgarsko Radio, Sofia, Bulgaria

Filed Mar. 2, 1981, Ser. No. 239,346
Int. Cl.³ H04R 19/00
U.S. Cl. 179—111 R 4 Claims



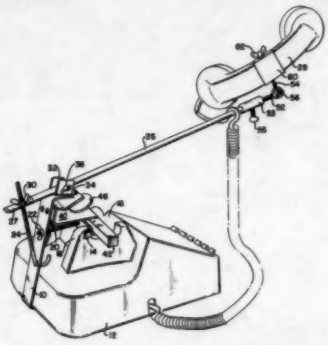
1. In an electrostatic acoustic converter having two sound transparent electrodes between which there is disposed a plastic electrically conductive membrane, the improvement wherein the membrane is fixed between two insulating plates having central oval-shaped openings therethrough, each of the insulating plates being partly coated with an electrically conductive layer which contacts the electrically conductive membrane, two identical insulating cards disposed outwardly of each of the insulating plates, a metal plate with a terminal being disposed on the sides of the insulating cards confronting the respective insulating plates, said metal plates overlying the central openings through the insulating plates, and a metal track on the said cards spaced radially outwardly of the metal plates, the metal plates and the metal tracks each being provided with a terminal, the metal plates being multi-perforated and constituting sound transparent electrodes.

4,383,140

TELEPHONE RECEIVER HOLDING DEVICE

Harold Goodman, 590 Ocean Ave., Apt. 11, Long Branch, N.J. 07740

Filed Dec. 22, 1980, Ser. No. 218,652
Int. Cl.³ H04M 1/12
U.S. Cl. 179—149 7 Claims



1. A holding device for the receiver of a telephone, comprising:

a support frame adapted for securement at the rear of said telephone and to be held fixedly in place thereby;

first means adapted for rotatable coupling to said receiver and pivotably secured to said support frame, to permit adjustable orientation of said receiver in horizontal and/or vertical plane, in accordance with the desires of the telephone user, and wherein said first means is arranged and configured to maintain said receiver in fixed position, separately and distant from the cradle portion of said telephone;

and switch means also secured to said support frame for mechanically enabling and disabling the telephone audio circuits within said receiver, independent of the specific receiver orientation or positioning maintained;

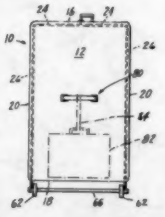
and wherein said support frame includes a cross member extending inwardly therefrom to secure to said telephone at the rear of the cradle portion thereof.

4,383,141

CARRIER FOR GARMENT BAGS AND THE LIKE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Oct. 13, 1981, Ser. No. 310,636
Int. Cl.³ A45C 5/14
U.S. Cl. 190—18 A 7 Claims

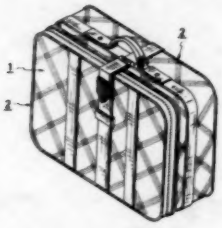


1. In combination with an elongated garment carry-on bag, a carrier for said bag comprising:

an inner frame including a pair of longitudinally extending side portions adjacent the longitudinally extending inner side edges of said bag,

a transversely extending top portion of said frame secured to said side portions,
a handle carried by said top portion and projecting through the top of said bag,
the lower ends of said side portions of said frame extending through the bottom of said bag, and
a wheeled axle secured to said lower ends.

4,383,142
BEADING FOR A SUITCASE
Katsukichi Kaneko, 2-20-9, Daito-ku, Tokyo, Japan
Filed Dec. 3, 1981, Ser. No. 327,093
Int. Cl.³ A45C *13/36*
U.S. Cl. 190—49 **7 Claims**



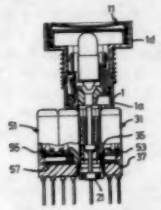
1. In a beading of a suitcase or the like comprising a flexible, elongated tubular portion and a projecting leg secured to the tubular portion, the improvement comprising;
a band spring rotatably positioned within said tubular portion, dimensioned so that said spring is relatively flexible in one direction and relatively inflexible in another direction, for urging said tubular portion and thereby the suitcase into a relatively sharply defined shape.

4,383,143
MOLDED SHELLS FOR LUGGAGE AND THE LIKE
Gary Philips, Youngstown, Ohio, assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Oct. 10, 1980, Ser. No. 196,021
Int. Cl.³ A45C *5/02*; B32B *17/06*
U.S. Cl. 190—53 **6 Claims**

1. A luggage shell and the like molded from a mixture comprising wood chips and fibers as a major constituent, and about 6% to 8% glass beads and about 6% to 8% plastic resin as minor constituents.

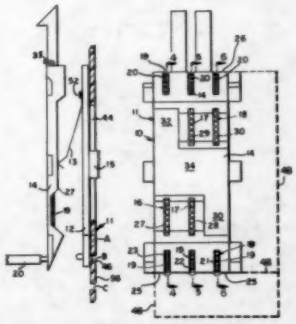
4,383,144
PUSHBUTTON SWITCH
Markus Kleeb, Reinach, Switzerland, assignor to Tschudin & Heid AG, Switzerland
Filed Jan. 21, 1981, Ser. No. 226,594
Claims priority, application Switzerland, Jan. 25, 1980, 600/80
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—5 R **11 Claims**

1. A pushbutton switch comprising:
a plunger guide housing having at least one guideway extending in a selected direction along a side of said plunger guide housing;
a plunger displaceable in said plunger guide housing parallel to said selected direction, said plunger having a knob adjacent one end thereof;
at least one switch element having a switch element housing and at least one movable actuator engageable by said plunger to move said actuator with displacement of said plunger from a first position to a second position for switching said switch element, said switch element housing having a portion which is slidably engaged with said guideway in said selected direction and shaped so as to preclude any relative motion of said switch element housing and said plunger guide housing in any direction transverse to said selected direction;
a locking element rotatably mounted to said plunger guide housing on an end thereof remote from said knob and about an axis which is parallel to said selected direction, said locking element being rotatable between a release position disengaged with said switch element housing to



permit displacement of said switch element housing with respect to said plunger guide housing in said selected direction and a holding position engaged with the surface of said switch element housing facing away from said knob for preventing motion of said switch element housing at least in a direction away from said knob; and
a restoring spring engaged with said at least actuator to bias said actuator towards said first direction thereof.

4,383,145
MATRIX SWITCH
John H. Zelina, Jr., Fairview, Pa., assignor to Lighting Systems, Inc., Erie, Pa.
Continuation of Ser. No. 97,397, Nov. 26, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,406
Int. Cl.³ H01H *15/02*
U.S. Cl. 200—16 D **9 Claims**



1. A switch comprising a platelike matrix, said matrix having laterally spaced longitudinal extending bores extending from one end of said body to the other,
wires including a first wire, a second wire and a third wire each having an insulated part and a bare part,
said bare parts of said wires extending through said bores, the ends of said wires at each side of said matrix being bent generally at right angles thereto holding said wires rigidly in said bores,
said insulated parts of said wires being received in notches at one end of said matrix, first openings formed in the top of said body adjacent a first end of said matrix;

said first openings communicating with said bores exposing said first wire and said second wire,

second openings formed on the top of said body adjacent said second end of said matrix exposing said second wire and said third wire,

an actuator slidably supported on said matrix, said actuator having a metallic contact spring attached thereto,

said contact spring having three spaced fingers, said fingers being bent at approximately 30 degrees forming a V-shaped parts,

said V-shaped parts being adapted to slide over said matrix from a first position to a second position and from said second position to a third position, said V-shaped parts of said spring being adapted to rest on said bare parts of said first wire and said second wire in the first position and all said fingers being adapted to rest on said matrix in a second position and said fingers being adapted to rest on said second wire and said third wire and on said matrix in a third position,

thereby connecting said first wire to said second wire in a first position and to be out of contact with all of said wires in a second position and to connect said second wire to said third wire in a third position.

4,383,146

FOUR-POLE LOW VOLTAGE CIRCUIT BREAKER

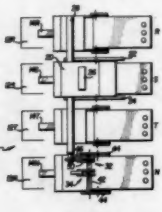
Marc Bur, Grenoble, France, assignor to Merlin Gerin, Grenoble, France

Filed Mar. 3, 1981, Ser. No. 240,078

Claims priority, application France, Mar. 12, 1980, 80 05589

Int. Cl.³ H01H *3/00, 9/20, 73/00*

U.S. Cl. 200—17 R **5 Claims**



1. A four-pole low-voltage circuit breaker comprising:

three main poles, consisting of one center pole and two adjacent outer poles, and a fourth adjacent neutral pole, each pole having a stationary contact and a contact arm structure carrying a movable contact thereon and being movable between open and closed positions,

an operating mechanism associated with said center main pole so as to occupy an asymmetrical position with respect to the layout of the four poles, and including a transverse tie bar extending across all the three main poles and supporting the movable contact arm structures of the three main poles,

and a kinetic linkage means connected between the movable contact arm structure of said fourth pole and said tie bar so as to bring about the closure of the contacts of the fourth pole before that of the contacts of the three main poles during the closing of the breaker, and to adapt the four-pole load torque to the three-pole motor torque of the operating mechanism.

4,383,147

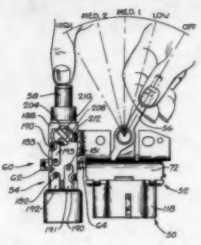
ELECTRICAL SWITCH HAVING INTERLOCKED BLOWER AND AIR CONDITIONER SWITCH COMPONENTS FOR VEHICLES

Andrew F. Raab, Morton Grove, Ill., and Arthur G. Perkins, deceased, late of Grosse Ile, Mich. (by Ruth Perkins, executrix), assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Jan. 15, 1982, Ser. No. 339,301

Int. Cl.³ H01H *9/26*

U.S. Cl. 200—50 C **21 Claims**



1. A combination blower and air conditioner switch for vehicles, comprising

casing means,

a blower control member movable in said casing means along a path between an OFF position at one end of said path and at least one ON position along said path,

blower contact means operable by said blower control member to an open position with said blower control member in said OFF position while being operable to a closed position with said blower control member in said ON position,

means for moving said blower control member along said path,

an air conditioner control member movable in said casing means between circuit opening and closing positions,

a return spring for biasing said air conditioner control member toward said circuit opening position,

air conditioner contact means operable by said air conditioner control member to an open position with said air conditioner control member in said circuit opening position while being operable to a closed position with said air conditioner control member in said circuit closing position,

latching means for latching said air conditioner control member in said circuit closing position,

said latching means including a latching element,

an interlock member movable between enabling and disabling positions in said casing means,

said interlock member having disabling means for engaging said latching element to disable said latching means with said interlock member in said disabling position,

and interlock operating means operable by said blower control member for moving said interlock member to said disabling position when said blower control member is moved to said OFF position while moving said interlock member to said enabling position when said blower control member is moved away from said OFF position,

said latching means thereby being disabled from latching said air conditioner control member in said circuit closing position when said blower control member is in its OFF position,

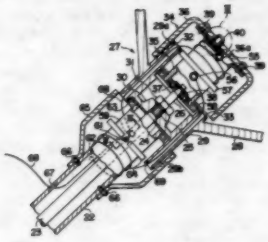
said latching means being enabled to latch said air conditioner control member in said circuit closing position when said blower control member is moved away from said OFF position to said ON position.

4,383,148

STEERING WHEEL SWITCH AND ELECTRICAL INTERCONNECTION ASSEMBLY

Sumitsugu Arima, Yokosuka, and Hiroshi Tsuda, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 9, 1981, Ser. No. 223,808
Claims priority, application Japan, Jan. 11, 1980, 55-2313[U]; Mar. 17, 1980, 55-34695[U]
Int. Cl.³ H01H 9/00; H01R 39/00
U.S. Cl. 200—61.54 16 Claims



1. A steering mechanism for a steerable vehicle including a body structure having a fore-and-aft direction, comprising

a hollow steering column tube held stationary with respect to said body structure,

a steering shaft axially extending in and through said steering column tube and having a rear end portion projecting rearwardly from the column tube, the steering shaft having a center axis therethrough and being rotatable about the center axis,

a steering wheel structure rotatable with the steering shaft about said center axis and including a hub portion secured to said rear end portion,

a switch support structure having an electric switch assembly supported thereon, the switch support structure being rotatable about an extension of said center axis with respect to each of the steering column tube, the steering shaft and the steering wheel structure,

first spool means fixed with respect to said switch support structure and having two outer peripheral surface portions which are substantially distinct from each other along the extension of said center axis,

second spool means fixed with respect to said steering column tube and having two outer peripheral surface portions which are substantially distinct from each other along the extension of said center axis, and

two flexible lines each anchored at one end thereof to said first spool means and at the other end thereof to said second spool means,

one of the flexible lines being partially wound in one direction on one of the two outer peripheral surface portions of said first spool means and on one of the two outer peripheral surface portions of said second spool means,

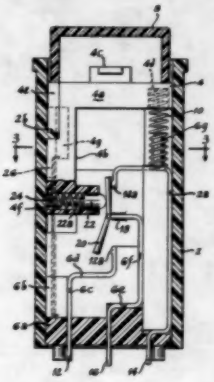
the other of said flexible lines being partially wound in the other direction on the other of said two outer peripheral surface portions of said first spool means and on the other of said two outer peripheral surface portions of said second spool means.

4,383,149

PUSH-BUTTON SWITCH WITH IMPROVED ROCKING CONTACTOR SWITCH MECHANISM

Edward Fulton, Costa Mesa, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 7, 1982, Ser. No. 386,160
Int. Cl.³ H01H 21/40, 19/00
U.S. Cl. 200—68 13 Claims



1. A rocking contactor electric switching structure comprising, in combination:

a blade contact;

a rocking contactor pivotally mounted on an end of said blade contact terminal;

stationary contact means;

actuator means engaging a surface of said rocking contactor, said actuator means including spring means biasing said actuator and said contactor toward said end of said blade contact;

operator means for moving said actuator means along said contactor surface across the plane of said blade contact for rocking said contactor into engagement with said stationary contact means to electrically bridge said blade contact and said stationary contact means; and

an electrically conductive U-shaped bearing clip interposed said contactor and said blade contact, said clip being disposed over said end of said blade contact with the bight portion of said clip toward said contactor for providing a uniformly smooth pivot surface for said contactor.

4,383,150

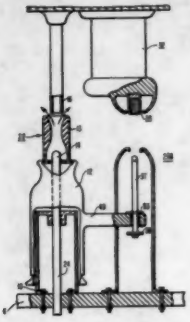
CIRCUIT-INTERRUPTERS HAVING SHUNTING CAPACITANCE AROUND THE SEPARABLE POWER CONTACTS WITH CAPACITANCE DISCONNECTING MEANS THEREFOR

Charles F. Cromer, Levelgreen-Penn Township, West Moreland County, and Willie B. Freeman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 941,614, Sep. 12, 1978. This application Nov. 5, 1980, Ser. No. 204,138
Int. Cl.³ H01H 33/70, 33/66
U.S. Cl. 200—144 AP 14 Claims

1. A compressed-gas-type of arc-extinguishing assemblage comprising a main-power interrupting unit having a pair of separable main-power interrupting contacts, means for causing the separation of the main-power separable contacts to establish an arc therebetween, means forcing a blast of compressed gas against said established power-arc to effect the extinction thereof, means defining a shunting capacitance and its serially-related isolating separable capacitance contacts disposed in electrically parallel arrangement to said power-interrupting unit, means for causing the separation of the isolating capaci-

tance separable contacts following the previous separation of the separable main-power contacts, and means for effecting



simultaneous closing of said main-power and isolating capacitance contacts during a closing position.

4,383,151

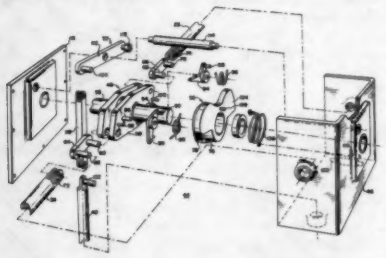
OPERATING MECHANISM FOR A FLUID BLAST CIRCUIT INTERRUPTER

Nils Holmgren, Greendale, and Charles J. Knotek, Racine, both of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed May 12, 1980, Ser. No. 148,728

Int. Cl.³ H01H *33/42, 33/54*

U.S. Cl. 200—148 R **13 Claims**



1. A fluid blast circuit interrupter for an electric power circuit, comprising;

at least one pair of separable circuit interrupting contacts, one of said contacts being movable relative to the other contact between a closed position, in engagement with said other contact to allow current to flow therebetween, and an open position, disengaged from said other contact to discontinue current flow therebetween;

interrupter operating means comprising a drive shaft, rotatable in first and second opposite directions and crank means mounted on said drive shaft for rotation therewith, said interrupter operating means coupled to said movable contact for moving said movable contact into and out of engagement with said other contact in accordance with predetermined rotation of said drive shaft, said interrupter operating means being movable between a closed position for closing said interrupter contacts and a first open position for opening said interrupter contacts;

a reservoir of high pressure, arc-quenching fluid;

plenum means, disposed between said reservoir and said pair of interrupting contacts for directing a flow of high pressure, arc-quenching fluid across an arc established between said contacts during an operation of said circuit interrupter;

a high pressure fluid valve disposed between said reservoir and said plenum means, and movable from a closed position to an open position for passing high pressure arc-quenching fluid from said reservoir into said plenum means;

means for activating said high pressure fluid valve;

valve coupling means for coupling said high pressure fluid valve to said valve actuating means;

said valve actuating means comprising cam means mounted on said drive shaft for rotation thereabout and being rotatable in said first direction along a predetermined path of travel to move said valve actuating means from a normally closed position to at least one open position, for opening said high pressure fluid valve and in said second direction along said predetermined path of travel to move said valve actuating means from said open position to said closed position for closing said high pressure fluid valve;

positioning means coupled to said valve actuating means for urging said valve actuating means toward its closed position;

opening latch means for coupling said cam means to said crank means when said valve actuating means and said interrupter operating means are in closed positions and upon initiation of movement of said interrupter operating means from it's closed position toward it's open position, said cam means being rotated with said crank means in said first direction to move said valve actuating means from it's closed position to its first open position against the force exerted on said valve actuating means by said positioning means, thereby to open said high pressure fluid valve in a predetermined manner; and

opening latch release means for disengaging said opening latch means when said cam means is rotated with said crank means during an interrupter opening operation to move said interrupter operating means to its first open position, thereby to allow said positioning means to rotate said cam means about said drive shaft in said second direction to return said valve actuating means to its closed position.

4,383,152

CIRCUIT BREAKER

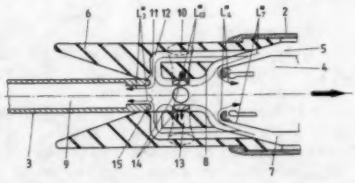
Georg Köppl, Birr, and Adelbert Rappange, Kleindöttingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 13, 1980, Ser. No. 177,814

Claims priority, application Switzerland, Aug. 15, 1979, 7455/79

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 R **7 Claims**



1. A circuit breaker having means for compressing a quenching medium, comprising:

a nozzle member, said nozzle member being made of an insulating material and having a main duct;

a first contact piece, said first contact piece being slidingly accommodated in said main duct;

a second contact piece, said second contact piece being fixedly connected to said nozzle member;

a first blow duct, said first blow duct being included in said nozzle member and having a first blow orifice located at a first axial location;

a second blow duct, said second blow duct being included between said nozzle member and said second contact piece and having a second blow orifice located at a second axial location, said second axial location being spaced from said first axial location; and

an exhaust duct, said exhaust duct being included in said nozzle member and having an exhaust orifice located at a third axial location, said third axial location being disposed between said first and second axial locations;

wherein when current flows through the circuit breaker said first and second blow orifices and said exhaust orifice are each covered by said first contact piece; and

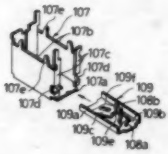
further wherein, when said current flow is interrupted, quenching medium is blown into said blow ducts and said first and second contact pieces move relative to each other such that said first and second blow orifices and said exhaust orifice are uncovered so that said quenching medium is blown through said first and second blow orifices and into said main duct, a first portion of said quenching medium being exhausted from said main duct through said exhaust orifice.

4,383,153

LOCKING TYPE PUSH-BUTTON SWITCH

Shiro Kondo, and Masao Kumagai, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 275,659
Claims priority, application Japan, Jun. 24, 1980, 55-88366[U]
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J **4 Claims**



1. In a locking type push-button switch having an operating unit, a spring urging said operating unit in a direction opposite to the direction in which said operating unit is actuatable, a slide element holding movable contact members therein and provided with a heart-shaped groove, said slide member being adapted to be moved slidingly in accordance with the displacement of said operating unit on a member to which fixed contact members are attached, a single-acting pin engaged at one end portion thereof with said heart shaped groove and adapted to be moved along said heart-shaped groove in accordance with an amount of displacement of said operating unit, and an enclosure in which the mentioned parts are housed, the improvement wherein said push-button switch includes an element for supporting said single-acting pin and consisting of a one-piece resilient spring plate having a tongue extending inwardly said supporting element holding the other end portion of said single-acting pin so as to allow said single-acting pin to be oscillated freely with the first-mentioned end portion of said single-acting pin being engaged with said tongue, said supporting element being inserted into said enclosure from an opening thereof to be fixed therein.

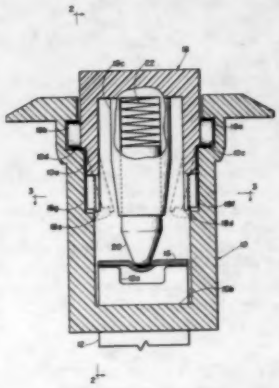
4,383,154

POSITIVE ACTION ROCKER SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Sep. 3, 1982, Ser. No. 414,828
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—291 **7 Claims**

1. An electric switch comprising a case having an upwardly open cavity defined by spaced integrally formed side walls, fixed contacts in a bottom wall of said case, a movable contact element for selectively bridging said fixed contacts, an operating member having laterally projecting portions received in aligned openings, defined in the facing surfaces of said spaced side walls, said member having a depending central portion, means connecting said movable contact element to said depending central portion of said operating member to provide at least two switch positions, said operating member having a cross sectional shape of inverted U-shape, a web portion of said U-shape integrally formed with said depending central portion of said member, and said shape having integral depending leg portions located in closely spaced relation to said case side



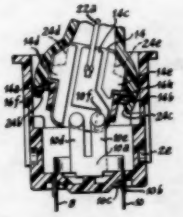
walls and having outside surface areas which are located adjacent to and move parallel to areas of said facing surfaces of said case side walls, said adjacent surface areas being of irregular non-planar contour to cause resilient deformation of said depending member leg portions as a result of pivotal movement of said member toward at least one of said at least two switch positions.

4,383,155

PIVOTED-ACTUATOR SWITCH WITH PC BOARD SWITCHED LIGHT INDICATOR

Richard B. Tenner, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 18, 1981, Ser. No. 275,548
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—315 **9 Claims**



1. A pivoted-actuator switch with PC board switched light indicator comprising two subassemblies including:

an actuator subassembly comprising:

an operating member having a hole extending through an upper surface thereof to a bottom side of said operating member;

an indicator lamp mounted in said hole so as to be visible at the upper surface of said operating member and having electric leads extending through said hole to the bottom side of said operating member;

a PC board positioned partly within said operating member

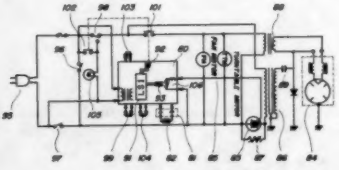
for movement therewith and having printed circuits on opposite surfaces thereof connected to said leads;
and a switch contact actuator snap-in mounted to said operating member and having an aperture through which said PC board partly extends;
and a housing subassembly comprising:
an insulating switch base;
stationary switch contacts mounted in said base and including terminals extending to the exterior thereof for connection to a circuit;
movable contact means within said base for bridging said stationary switch contacts; and
lamp contacts mounted in said base and comprising contact fingers biased against opposite surfaces of said PC board and terminals extending to the exterior for connection to a circuit;
and means for snap-in mounting said actuator subassembly within the base of said housing subassembly for pivotal movement so that said actuator acts on said movable contact means to close and open said movable contact means with respect to said stationary switch contacts when said operating member is manipulated, and so that said PC board simultaneously connects said indicator lamp to said lamp contacts in a predetermined position of said operating member.

4,383,156

CONTROL CIRCUIT FOR CONTROLLING A MAGNETRON OF A MICROWAVE OVEN

Takashi Furusawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1978, Ser. No. 926,395
Claims priority, application Japan, Jul. 25, 1977, 52-99701[U]
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **12 Claims**



1. A power control circuit for energizing a microwave oven magnetron having a pair of bias terminals and a filament, said control circuit further comprising:
high voltage transformer means having a primary winding and a secondary winding connected to said magnetron bias terminals;
control switching means for applying power to said magnetron, said control switching means having a pair of power terminals directly connected to a power source and said primary winding, said control switching means having a third control terminal;
logic means including a drive circuit having an output, the output of said drive circuit being connected to only the control terminal of said control switching means to control the power applied to said magnetron bias terminals, said drive circuit output being the only control signal used to control the application of power to said magnetron bias terminals;
a heating transformer having an input winding and an output winding connected to said magnetron filament; and
filament relay switch means directly responsive to an output of said logic means for controlling the application of power to said magnetron filament mutually independent to the application of power to said magnetron bias terminals by said control switching means.

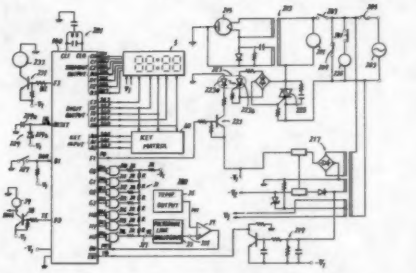
2. The control circuit according to claim 1, wherein said control switching means comprises a triac connected to said primary winding.

4,383,157

ELECTRONIC CONTROLLED HEAT COOKING APPARATUS AND METHOD OF CONTROLLING THEREOF

Takeshi Nakata, Otsu; Hitoshi Takase, Hirakata, and Atsushi Horinouchi, Otsu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 3, 1980, Ser. No. 109,350
Claims priority, application Japan, Jan. 20, 1979, 54-5761
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **23 Claims**

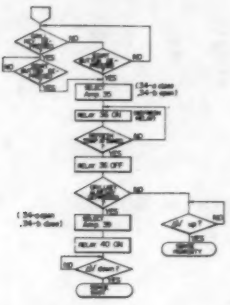


1. An electronic controlled heat cooking apparatus, comprising:
heating energy generating means for providing heating energy to a material being cooked,
entry means for entering information for controlling said heating energy generating means,
storing means for storing data,
an infrared radiation detecting device for receiving an infrared radiation from said material being cooked,
voltage generating means for generating a voltage associated with the output from said infrared radiation detecting device,
analog voltage generating means for generating an analog voltage changing in a linear manner,
correcting means for correcting said linearly changing voltage to a voltage analogous to the output voltage characteristic of said infrared radiation detecting device,
comparing means for comparing said corrected analog voltage and said voltage associated with said output of said infrared radiation detecting device,
temperature data providing means for providing corresponding temperature data responsive to said corrected analog voltage if and when said comparing means detects substantial coincidence of said corrected analog voltage and said output associated voltage,
loading means for loading set temperature data from said entry means to said storage means when a temperature operation is commanded by said entry means, and
heat control means responsive to said set temperature data loaded in said storage means and temperature data provided by said temperature data providing means for controlling said heating energy generating means.

4,383,158
COOKING OVEN WITH MULTI-FUNCTION GAS SENSOR

Takeshi Niwa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1980, Ser. No. 217,405
Claims priority, application Japan, Dec. 24, 1979, 54-168851
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.55 B 5 Claims



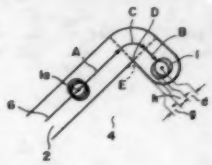
1. A cooking oven comprising
a casing;
an oven chamber located within said casing for accommodating food to be cooked, said oven chamber having walls with entrance and exit openings located therein;
a microwave generator, microwave energy from said generator being guided into said oven chamber;
a heater element adjacent the walls of said oven chamber for heating the food placed in said oven chamber;
means for introducing ventilating air into said oven chamber through said entrance openings and ejecting air from said oven chamber through said exit openings;
a ceramic gas sensor positioned in the path of said ventilating air;
a heater member for heating the surface of said gas sensor to first and second temperature levels, said gas sensor being capable of sensing a first gas within said oven chamber at said first temperature of the surface of said gas sensor and being capable of sensing a second gas within said oven chamber at said second temperature of the surface of said gas sensor, said second gas being different from said first gas;
a control circuit for selectively controlling the operation of said microwave generator and said heater element in response to an output signal from said ceramic gas sensor and for controlling switching of the heating temperature levels of said heater member in accordance with whether said first or second gas is to be sensed; and
switching means for controlling said heater member to change the surface temperature of said ceramic gas sensor in response to a control signal applied from said control circuit.

4,383,159
METHOD OF AND APPARATUS FOR ELECTRICAL MACHINING WITH A VIBRATING WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Nov. 24, 1980, Ser. No. 209,892
Claims priority, application Japan, Jan. 22, 1979, 54-152248
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 8 Claims

1. In an apparatus for electrical-machining an electrically conductive workpiece, having a continuous wire-form electrode adapted to be axially transported continuously from a supply side to a takeup side while continuously traversing the workpiece and defining a machining gap therewith supplied with a machining liquid; power supply means for passing an electrical machining current between the workpiece and the wire-form electrode through the machining gap to electroerosively remove material from the workpiece; means for imparting a vibration to the wire-form electrode in the region of the machining gap transversely to the axis of the electrode; and machining feed means for relatively displacing the workpiece and the wire-form electrode transversely to the axis of the

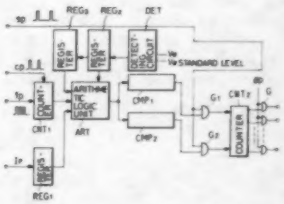


electrode along a predetermined cutting path corresponding to a desired contour to be formed in the workpiece, the improvement which comprises control means for controlling the amplitude of the vibration imparted to the wire-form electrode as a function of the shape of said cutting path, and sensing means operatively connected to said machining feed means for providing a sensing signal representing the shape of said cutting path, said control means being responsive to said sensing signal for controlling the amplitude of the vibration imparted to the wire-form electrode.

4,383,160
AUTOMATIC CUTTING CONDITION CHANGEOVER EQUIPMENT

Haruki Obara, Sagamihara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,440
Claims priority, application Japan, Mar. 29, 1980, 55/40713
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 6 Claims



1. An automatic cutting condition change-over equipment having a power source and a wire electrode, and having a mean working voltage, a cutting speed, and a cutting speed signal responsive to the cutting speed for controlling the cutting speed of a workpiece, comprising:
a feed control circuit, operatively connected to receive the cutting speed signal, to the workpiece and to the wire electrode, for controlling the cutting speed so that the mean working voltage between the wire electrode and the workpiece is constant;
an arithmetic logic unit, operatively connected to receive the speed signal and a peak signal indicating the peak current of the power source, for calculating a predetermined optimum cutting condition formula in accordance with the peak signal and the speed signal, and for providing, as an output, the result thereof; and
electrical cutting condition changeover means for changing

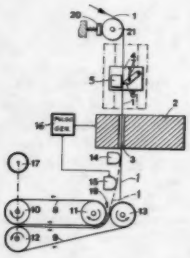
the peak current of the power source so that the output from the arithmetic logic unit is reduced to substantially zero.

4,383,161

THREADING AND CONVEYING DEVICE FOR AN ELECTRODE WIRE IN AN EDM APPARATUS

Francois Corcelle, Pouilly, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed May 6, 1981, Ser. No. 261,055
Claims priority, application Switzerland, May 5, 1980, 351380
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **5 Claims**



1. In an EDM apparatus, a mechanism for threading an electrode wire through a workpiece, said mechanism comprising means for pushing said wire through a starter aperture in said workpiece, wire conveying means taking hold of the end of said wire after threading through said starter aperture and for pulling said wire through said starter aperture, a stationary guiding surface for engagement with said wire after passage through said starter aperture and a stationary electric current supplying contact surface for engagement with said wire after passage through said starter aperture, said guiding surface and said contact surface being laterally offset relative to the axis of the starter aperture, and means for laterally displacing the end of said wire after threading through said starter aperture for engaging the end of said wire into said conveying means while simultaneously laterally displacing said wire for engaging said wire with said offset guiding and contact surfaces.

4,383,162

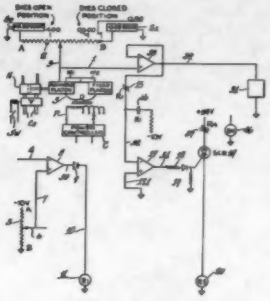
ELECTRICAL CONTROL CIRCUITS FOR FLASH WELDERS

Robert S. Ellis, deceased, late of Canfield, Ohio (by Virginia A. Ellis, executrix), assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Jun. 9, 1980, Ser. No. 157,896
Int. Cl.³ B23K *11/04*
U.S. Cl. 219—100 **21 Claims**

1. In a flash welder having relatively movable platens which carry the work pieces to be welded, said platens moving relatively through flashing and upset operations toward closed position, the improved method of initiating the start of upset operation of said platens at an operator-selectable value of flashing electrical energy, comprising:

adjusting the magnitude of a voltage from a voltage source to an operator-selectable value to block operation of a switch-controlling device until an energy signal representing electrical energy input to said welder, said energy signal derived from voltage and current input to said welder, during flashing operation has reached a value to counteract said adjusted voltage and effect operation of said switch-controlling device, and



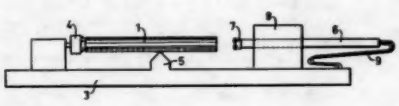
utilizing the operation of said switch-controlling device to energize a circuit which includes means for initiating the start of upset operation of said platens.

4,383,163

METHOD OF MANUFACTURING A HEAT EXCHANGE TUBE WITH INTERNAL SURFACE ENLARGING ELEMENTS

Bertil H. Sjöholm, Ronneby, Sweden, assignor to Gotaverken Anteknik AB, Gothenburg, Sweden

Division of Ser. No. 948,482, Oct. 4, 1978, Pat. No. 4,241,287.
This application Nov. 10, 1980, Ser. No. 205,299
Claims priority, application Sweden, Oct. 27, 1977, 7712118
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—107 **4 Claims**



1. A method of manufacturing a heat conducting member in the form of a tube provided with surface enlarging pin elements at its internal wall face, comprising the steps of:

mounting said tube on a support;

arranging a plurality of elongate pin holders in an annular group, each of said holders having a length sufficient to position a pin at any desired location along said tube;

placing a pin in each of said holders generally transverse to the length of said holders;

inserting said holders into said tube to a desired depth and position where said pins are to be attached;

applying an outwardly directed force to said holders to bring one end of each of said pins into contact with said internal wall face;

passing a welding current through said pins and the areas of contact at said wall face, while continuing to press said pins against said wall face;

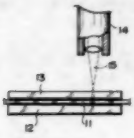
detaching said holders from said pins and removing said holders from said tube; and

repeating the above pin positioning and welding steps for each group of pins to be attached to said internal wall face.

4,383,164
METHOD OF MANUFACTURING A CONTROL GRID FOR FLUORESCENT DISPLAY TUBE

Goro Eto, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Dec. 14, 1979, Ser. No. 103,856
Claims priority, application Japan, Dec. 16, 1978, 53-154600
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LD 7 Claims



1. A method of manufacturing a control grid for a fluorescent display tube which effects luminous display of numerals or symbols by accelerating and controlling electrons emitted from a filamentous cathode and selectively impinging the electrons upon anodes on which phosphor layers are deposited comprising the steps of:

preparing a net made of fine metal wire woven in a latticework pattern, said metal wires having diameters lying in the range of 20 to 60 μm;

preparing a thin metal frame member;

mounting the wire net upon the metal frame member;

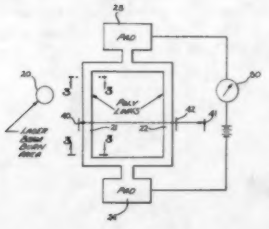
placing a light transmitting holding plate upon the wire net for pressing and putting the wire net upon the metal frame member; and

irradiating laser beams to contract portions of the wire net and the metal frame member through the holding plate, thereby to weld the wire net to the metal frame member.

4,383,165
METHOD FOR ALIGNING LASER BEAM WITH FUSES IN INTEGRATED CIRCUIT

Ronald J. Smith, and John P. Dishaw, both of San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 21, 1981, Ser. No. 257,505
Int. Cl.³ B23K 26/00, 26/02, 26/04
U.S. Cl. 219—121 LN 13 Claims



1. A method for determining the position of a laser beam on an integrated circuit comprising the steps of:

forming a first and second spaced-apart, generally parallel links in said circuit;

positioning said laser beam on said circuit to a position known to be spaced-apart from said first link;

changing the relative position of said laser beam and said first link by movement in a first direction such that the distance between said first link and laser beam is decreased;

monitoring the electrical characteristics of said first link to determine when said electrical characteristics of said first link are substantially altered by said laser beam;

positioning said laser beam on said circuit to a position known to be spaced-apart from said second link;

changing the relative position of said laser beam and said second link by movement in a second direction opposite to said first direction such that the distance between said second link and said laser beam is decreased;

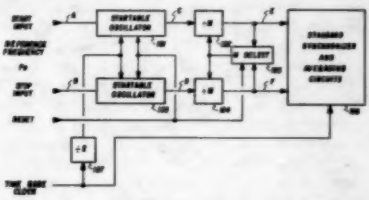
monitoring the electrical characteristics of said second link so as to determine when said electrical characteristics of said second link are substantially altered by said laser beam;

whereby by knowing the position of said laser beam on said circuit when the electrical characteristics of said first and second links are altered by said laser beam, the precise position of said laser beam on said circuit is determined.

4,383,166
AUTOMATIC ECHO-CHAMBER FOR MEASURING SINGLE TIME INTERVALS BY REPLICATION AND AVERAGING

David C. Chu, Woodside, and Robert W. Offermann, Saratoga, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1980, Ser. No. 136,142
Int. Cl.³ H03K 21/32; G07C 1/02
U.S. Cl. 377—20 7 Claims



1. A method for measuring a time interval, the method comprising the steps of:

selecting the phase of a first oscillator in a constant predetermined relationship to the phase of a reference oscillator in response to a start event, said first oscillator having an output of periodic pulses;

selecting the phase of a second oscillator in a constant predetermined relationship to the phase of said reference oscillator in response to a stop event, said second oscillator having an output of periodic pulses;

forming replications of said start and stop events from the outputs of said first and second oscillators by:

scaling the output of said first oscillator to provide a first signal of periodic pulses having a pulse period equal to the period of M pulses of said first oscillator output, where M is a predetermined integer and said first signal is a repetitive replication of a start event mark; and

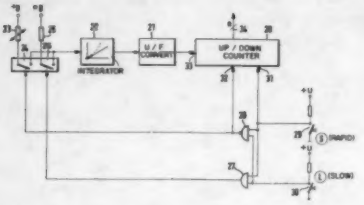
scaling the output of said second oscillator to provide a second signal of periodic pulses having a pulse period equal to the period of M pulses of said second oscillator output, where M is said predetermined integer and said second signal is a repetitive replication of a stop event mark; and

measuring the time intervals between said replicated start and stop event marks to determine the time interval between said start and stop events.

4,383,167
DRIVE CONTROL CIRCUIT FOR DENTAL TREATMENT INSTRUMENTS

Hermann Gmeinder, Warthausen-Oberhöfen, and Stefan Beier, Biberach, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,705
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 291608
Int. Cl.³ A61C 1/06; H02P 9/44
U.S. Cl. 377—2 6 Claims



1. A drive control circuit for controlling driving of dental treatment instruments by means of driving devices associated therewith, operating data for which is adapted to be fed into a forward/backward counter when a particular treatment instrument is selected for usage, comprising:

a. a forward/backward counter, having a counting pulse input, and being adapted to be fed with operating data;

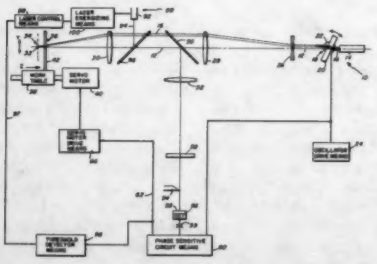
b. starter switch coupled to said forward/backward counter and being operable, when actuated, to change the count of the forward/backward counter step-wise, for transmission to a control element, which is associated with the particular dental treatment instrument; and

c. control circuit means coupled between said forward-/backward counter and said starter switch and being operable, upon actuation of the starter switch, to change the count in said forward/backward counter at a variable rate by increasing the counting speed of the forward-/backward counter with increasing actuation time of the starter switch by increasing the variable rate at which counting pulses are produced at the counting pulse input of said forward/backward counter.

4,383,168
AUTOMATIC FOCUSING APPARATUS

Clarence F. Luck, Jr., Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 2, 1980, Ser. No. 155,862
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 18 Claims



1. Automatic focusing apparatus comprising:

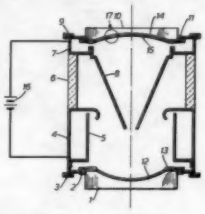
first means for producing a laterally translating beam of electromagnetic radiation and directing said beam successively along a plurality of paths intersecting at a focal spot in a focal plane; and

second means for detecting lateral translational movement of the directed beam in a transverse plane adjacent the focal plane and for determining the position of said transverse plane relative to said focal plane.

4,383,169
LUMINESCENT SCREEN DEVICES

John E. U. Ashton, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed May 30, 1979, Ser. No. 43,470
Claims priority, application United Kingdom, May 30, 1978, 23754/78
Int. Cl.³ H01J 31/50, 40/14
U.S. Cl. 250—213 VT 6 Claims

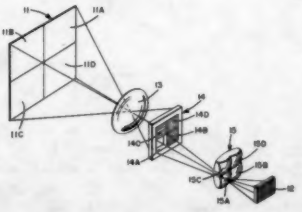


1. A light image-forming device of the sort wherein a source of electrons is stimulated to produce electrons which are then accelerated into contact with a luminescent screen which includes a layer of luminescent material constituting the electron-sensitive, light-emitting section thereof, which layer of luminescent material is provided with a backing layer of metal, so as to form a light image corresponding to the original stimulation of the electron source, wherein between and in contact with both said layer of luminescent material and said backing layer of metal is a layer of material whose thermal properties are such that it tends to act as a heat sink to absorb energy from high energy density pulses of electrons impinging thereon.

4,383,170
IMAGE INPUT DEVICE

Nobuyuki Takagi, Koganei; Hiroshi Kobayashi, Tokyo, and Okio Yoshida, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 17, 1980, Ser. No. 207,474
Claims priority, application Japan, Nov. 19, 1979, 54-148842
Int. Cl.³ H01J 3/14
U.S. Cl. 250—216 8 Claims



1. An image input device comprising:

an image source which generates an image light;

a light sensor facing said image source, and said light sensor including a two-dimensional array of photoelectric converting elements for generating electrical signals in response to the image light;

image dividing means positioned between said light sensor and said image source for dividing the image light into a plurality of components in a predetermined timed order, the plurality of components of image light individually irradiating all of said photoelectric converting elements of said light sensor in the predetermined time order; and

reading means connected to said light sensor for reading out the electrical signals from said light sensor in the predetermined timed order.

4,383,171

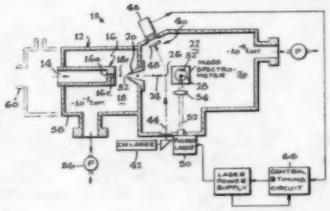
PARTICLE ANALYZING METHOD AND APPARATUS

Mahadeva P. Sinha, Temple City; Charles E. Giffin, Pasadena; David D. Norris, San Gabriel, and Sheldon K. Friedlander, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1980, Ser. No. 207,135

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—282 **12 Claims**



1. Apparatus for analyzing liquid or solid particles comprising:

means for passing individual particles to be analyzed that each have a mass that is a plurality of orders of magnitude greater than the mass of molecules in air, in free flight past a predetermined path location;

means for directing a light beam across said location, with an intensity to heat a particle sufficiently to vaporize and ionize it; and

mass spectrometer means located near said path location for analyzing the ions resulting from the particle vaporization and ionization.

4,383,172

METHOD AND APPARATUS FOR MEASURING COATING THICKNESSES ON CONTINUOUSLY MOVING MATERIAL

James A. Holler; William B. Stanton; Jerry J. Spongr, all of Tonawanda; Boris B. Joffe, Buffalo; Peter W. Raffelsberger, North Tonawanda, and John E. Tiebor, Williamsville, all of N.Y., assignors to Twin City International, Inc., Amherst, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,920

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—308 **22 Claims**

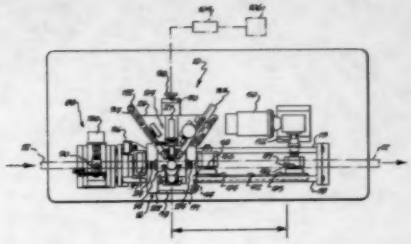
1. Apparatus using beta radiation techniques for measuring coating thickness on strip material moving along a predetermined path, said apparatus comprising:

a. a shuttle carrying a measuring probe having a radioactive isotope source and a radiation detection device;

b. drive means for reciprocating said shuttle along a preselected segment of the path travelled by the strip material;

c. means for selectively engaging and disengaging said shuttle and the moving strip, said shuttle being pulled by the strip for synchronous movement therewith during engagement thereof and being driven independently of the strip during disengagement thereof;

d. said drive means moving said shuttle forwardly along said path prior to engagement with the moving strip material to accomplish a smooth engagement of said shuttle with the moving strip; and



e. means for selectively engaging and disengaging said probe with and from the moving strip while said shuttle and the strip are engaged.

4,383,173

INFRARED RADIATION DETECTING SYSTEMS

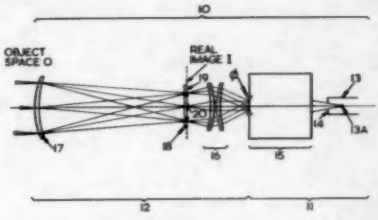
Iain A. Neil; Gordon H. McLean, and Peter J. Berry, all of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Apr. 21, 1981, Ser. No. 256,246

Claims priority, application United Kingdom, Apr. 26, 1980, 8013850

Int. Cl.³ H01J *31/49;* **G01J** *1/00;* **G01B** *11/00*

U.S. Cl. 250—330 **7 Claims**



1. An infrared radiation detecting system comprising an infrared detector element forming part of a detector incorporating a cold shield, and an optical system for imaging infrared radiation from a field of view onto a real image surface spaced from the detector element and relaying said image from said surface to said detector element, wherein a graticule having markings which are reflective to infrared radiation emitted by the detector is located at said image surface whereby the graticule markings are imaged onto the detector element in superimposition with the infrared radiation from the field of view.

4,383,174

PYROELECTRIC DETECTOR AND METHOD FOR MANUFACTURING THE SAME

Sadao Matsumura, Inagi; Katsuyoshi Fukuta, Kawasaki, and Hitoshi Hirano, Kanagawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 23, 1980, Ser. No. 190,161

Claims priority, application Japan, Sep. 25, 1979, 54-122947; Mar. 25, 1980, 55-38043

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—338 **8 Claims**

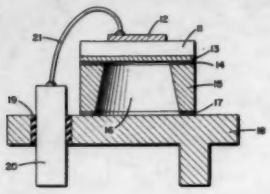
1. A pyroelectric detector comprising:

a pyroelectric material;

an infrared receiving electrode mounted on one face of said pyroelectric material for receiving infrared rays;

a shield electrode placed at the other face of said pyroelectric material;

a substrate made of a material selected from the group consisting of semiconductive and conductive material fas-



tened to said shield electrode by conductive glue, said substrate having a hole substantially broader than said infrared receiving electrode; and

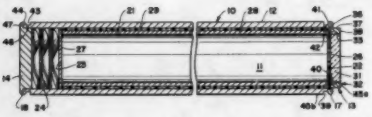
a stand to which said substrate is fastened by conductive glue.

4,383,175

ENCAPSULATED SCINTILLATION DETECTOR

Ival L. Toepke, Newbury, Ohio, assignor to Bicron Corporation, Newbury, Ohio

Filed Sep. 30, 1980, Ser. No. 192,540
Int. Cl.³ G01T *1/202*
U.S. Cl. 250—368 **11 Claims**



1. A scintillation detector comprising a detector element and a hermetically sealed housing encapsulating said detector element, said housing including a window assembly providing a light-transmitting glass window and a metal mounting ring, a hermetic glass-to-metal seal being established between said ring and window, said window being optically coupled to the detector element by a layer of optical couplant material, said ring being welded to the remainder of said housing after it is assembled with said window, said detector including thermal barrier means incorporated into said housing at a position between the weld site and said hermetic seal and couplant material to prevent welding heat from damaging the hermetic seal and the couplant material.

4,383,176

OBJECTIVE LENS FOR ELECTRON MICROSCOPE

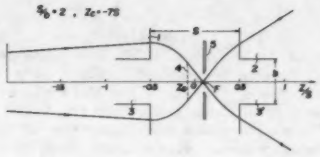
Akira Yonezawa, Fussa, and Kohei Shirota, Akikawa, both of Japan, assignors to International Precision Incorporated, Tokyo, Japan

Filed Jan. 29, 1981, Ser. No. 229,527
Claims priority, application Japan, Jan. 30, 1980, 55-8722
Int. Cl.³ H01J *29/64*
U.S. Cl. 250—396 ML **1 Claim**

1. A symmetrical field type objective lens of an electron microscope which is of a rotationally symmetric configuration relative to an optical axis of a magnetic field type electron lens system and comprises an upper magnetic pole piece and a lower magnetic pole piece disposed with a predetermined distance therebetween, and bores of a same diameter which are formed in said upper and lower magnetic pole pieces, respectively, wherein said predetermined distance represented by S and said diameter of said bores represented by b are so selected that a relation given by the following expression

$$1 \leqq S/b \leqq 5$$

is fulfilled, and wherein magnetic excitation for said objective lens represented by J is so selected with respect to a magnetomotive force of Riecke-Ruska's condenser objective lens represented by Jc.o. at which an electron beam incident on said objective lens in parallel with said optical axis once intersects



said optical axis and leaves said objective lens in parallel with said optical axis that for a given value of S/b in the range defined above, the following condition

$$1.4\ Jc.o. \leqq J \leqq 1.7\ Jc.o.$$

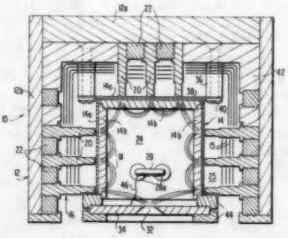
is fulfilled.

4,383,177

MULTIPOLE IMPLANTATION-ISOTOPE SEPARATION ION BEAM SOURCE

John H. Keller, Newburgh, and Charles M. McKenna, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Hopewell Junction, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,652
Int. Cl.³ H01J *27/00*
U.S. Cl. 250—423 R **9 Claims**



1. A compact, high temperatures multipole plasma containment ion beam source comprising:

an outer box formed of heat conductive metal and constituting a heat sink cooling block;

an inner, open ended box constituting a high temperature plasma confining structure;

spacer means for mounting said inner box spaced from said outer box;

a cathode and an anode within said inner box;

a plurality of magnetic pole pieces mounted within said outer box and projecting from said outer box towards said inner box;

a plurality of permanent magnets, individual ones of said permanent magnets being positioned between given magnetic pole pieces to separate pairs of said plurality of magnetic pole pieces such that said magnetic pole pieces are separated from one another and from said confining structure by distances such that a minimum magnetic field is produced toward the center of the confining structure and an effective containment field is produced around the periphery of said confining structure permitting said ion beam source to operate at high beam current intensity and

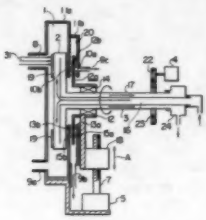
high plasma density with generated heat reaching the permanent magnets being rapidly conducted therefrom by said outer box housing said magnetic pole pieces and said permanent magnets for cooling the same.

4,383,178

SYSTEM FOR DRIVING ROTARY MEMBER IN VACUUM

Atsushi Shibata, Katsuta, and Takeshi Koike, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,784
Claims priority, application Japan, Apr. 11, 1980, 55-46900
Int. Cl.³ H01J *37/00*; G21K *5/10*
U.S. Cl. 250—441.1 **5 Claims**



1. A system for driving a rotary member in vacuum, comprising:

a first vacuum chamber in which said rotary member and a rotary shaft supporting said rotary member are rotatably inserted through a vacuum seal;

a shield supporting said vacuum seal in the central portion and defining a part of said first vacuum chamber;

a second vacuum chamber receiving a peripheral portion of said shield for sliding movement in airtight relation;

support means in said second vacuum chamber for supporting the peripheral portion of said shield for sliding movement in airtight relation;

means for rotating said rotary shaft; and

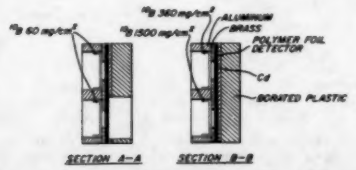
means for reciprocately moving said shield in a manner to cause sliding movement of the peripheral portion of said shield within said second vacuum chamber, thereby causing through said vacuum seal and said rotary shaft reciprocatory movement of said rotary member in a plane of rotation of the latter.

4,383,179

NEUTRON DOSIMETER

Yossi Eisen, Branizti 19 Str., Rishon Le Zion; Yair Shamai, Marton Str. 3, Rehovot; Even Ovadia, Idmit 12 Str., Givataim, and Sergio Faermann, Hefetz Haim Str., No. 53/7, Ap. 14, Petach Tikvah, all of Israel

Filed Sep. 8, 1980, Ser. No. 184,667
Int. Cl.³ G01T *1/04, 3/00*
U.S. Cl. 250—472.1 **8 Claims**



1. A neutron dosimeter comprising first, second, and third neutron detectors, said first neutron detector operative in the 1 eV to 30 KeV region, said second neutron detector operative in the range of 30 KeV to 1 MeV, and

said third neutron detector operative in the 1 MeV to 14 MeV region, and

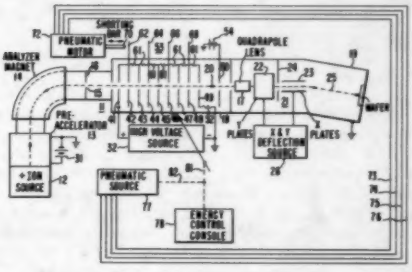
a single polymer foil covered with a thin polyethylene layer, said polymer foil selected from the group consisting of bare polycarbonate foil and a diester of a carbonic acid, and said polymer foil serving as said first, second, and third neutron detectors.

4,383,180

PARTICLE BEAM ACCELERATOR

Norman Turner, Gloucester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 18, 1981, Ser. No. 264,498
Int. Cl.³ H01J *37/317*
U.S. Cl. 250—492.2 **8 Claims**



5. An ion beam implanter for implanting positive ions from an ion source into a semiconductor wafer comprising first means for accelerating ions from the source into a beam, means for bending the beam derived from the first accelerator means to select a species of ions from the source, second means for accelerating the selected species of ions from the source into a high energy beam, means for deflecting charged ions in the high energy beam away from neutral ions in the high energy beam so the charged ions in the high energy beam irradiate the wafer, said second means for accelerating including:

N electrodes equally spaced along the path of the beam as it traverses the second means for accelerating, where N is an integer greater than 2, a resistive voltage divider having N terminals respectively connected to the N electrodes, said divider having the same resistance between adjacent ones of said electrodes, a variable DC source for applying a high positive voltage to terminal N of the divider, ground being applied to the first terminal of the divider, terminal N being connected to an electrode that is upstream, in the direction of ion beam propagation, of the electrode connected to the first terminal, a shorting bar dimensioned and positioned to selectively engage terminals N, (N−1) . . . 1, drive means for stepwise moving the shorting bar so an end portion of the bar sequentially engages terminals N, (N−1) . . . 1 in order, the remainder of the bar engaging terminals N, (N−1) . . . (a+1) while the bar end portion engages terminal a, where a is selectively every integer from 1 to N, and means for synchronizing the stepwise movement with variations of the DC source to maintain a substantially constant voltage gradient along the length of the unshorted electrodes despite variations in energy applied to the beam by the second accelerator means.

4,383,181
METHOD AND APPARATUS FOR ANALYZING A GASEOUS MIXTURE

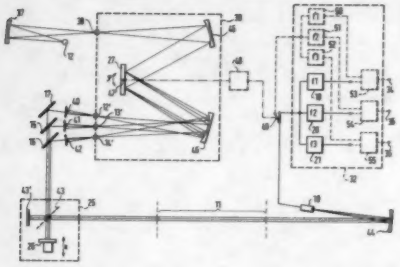
Dieter Roess, Planegg, and Wolfgang Hartig, Essen, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,660

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948590

Int. Cl.³ G01N *15/06*

U.S. Cl. 250—573 **8 Claims**



1. In an apparatus for analysing by spectral absorption a gaseous mixture containing several molecular gases, said apparatus comprising one or more radiation sources for generating spectral components each having a wavelength characteristic of a respective vibrational-rotational-excitation band for one of said gases, modulator means for modulating each of said spectral components with a uniquely associated marking frequency, means for jointly directing said spectral components in the form of a measuring beam through said gaseous mixture onto a photoreceiver, and an evaluation circuit including electronic filter means tuned to each of said marking frequencies connected to receive signals from said photoreceiver and to deliver signals proportional to the intensity of the associated spectral component, the improvement wherein said photoreceiver is the photoreceiver of a two beam interferometer having a movable mirror, wherein means are provided for directing said spectral components from each said radiation source onto said movable mirror in the form of a collimated beam of light, and wherein means are provided for moving said movable mirror to and fro along said beam of light over at least a few wavelengths to modulate said spectral components at said marking frequencies.

4,383,182
UNDERWATER POWER GENERATOR

Wallace W. Bowley, Med. Engr. Dept., Box V–139, Storrs, Conn. 06268

Continuation of Ser. No. 585,907, Jun. 11, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,595

Int. Cl.³ F03B *13/10*

U.S. Cl. 290—43 **10 Claims**

1. Apparatus for converting the energy of water currents into useful power comprising:

at least two power producing members adapted to be submerged within a water current of substantially constant velocity,

a power absorbing and converting member, and

means connecting said power producing members to said power absorbing and converting member,

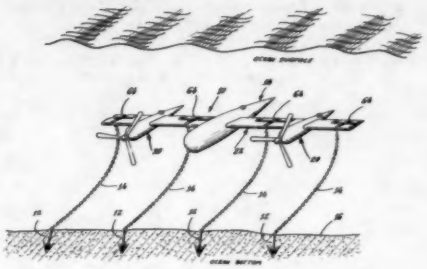
said power producing members including

rotor means having blades positioned substantially normal to the direction of said water current and adapted to rotate under the axial influence of said water current,

a source of liquid,

first centrifugal pump means upstream from and communicating with said source of liquid,

power transmission means between said rotor means and centrifugal pump means for operating said centrifugal pump means to pump liquid from said source through said connecting means to said power absorbing and converting member when said rotor means rotates under the influence of said water current,



said power absorbing and converting member including means for converting mechanical energy to useable power and,

second centrifugal pump means communicating with said connection means and operable in response to receiving liquid from said first centrifugal means through said connection means for supplying mechanical energy to said energy converting means and for returning said liquid to its source.

4,383,183
CONTROL ARRANGEMENT FOR A UNIFORM LOAD DISTRIBUTION OF AT LEAST TWO POWER SUPPLY DEVICES CONNECTED IN PARALLEL AT THE OUTPUT SIDE

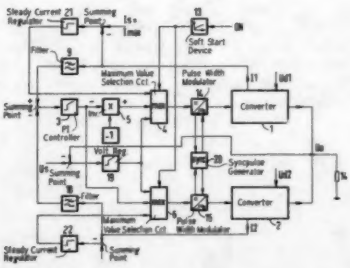
Manfred Schlenk, Augsburg, and Erich Schmidtner, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,332

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130356

Int. Cl.³ H02J *3/38*

U.S. Cl. 307—43 **5 Claims**



1. In a control arrangement for providing uniform load distribution of at least two power supply devices, in which each power supply device comprises a converter having an input and first and second outputs, a pulse width modulator connected to said input, a maximum value selection circuit connected to said pulse width modulator, a steady and a non-steady current regulator connected to the maximum value selection circuit along with a commonly-shared voltage regu-

lator, means commonly connecting the first output of each converter to the voltage regulator, and in which the second output is connected to the steady current regulator and to the non-steady current regulator, the improvement therein comprising:

a proportional-integral controller interposed between the second outputs and the maximum value selection circuit in place of the non-steady current regulators, said proportional-integral controller directly connected to one of the maximum value selection circuits; and an inverter connecting the proportional-integral controller to the other maximum value selection circuit.

4,383,184

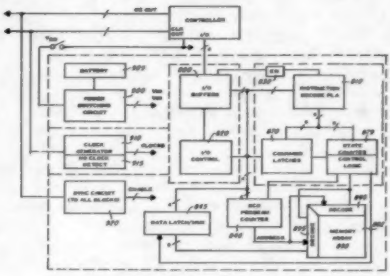
POWER CONTROLLER

Harry G. McFarland, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1980, Ser. No. 163,238

Int. Cl.³ H02J *7/00*

U.S. Cl. 307—66 **12 Claims**



1. A power controller system comprising:

a main unit including (a) a first DC power source and (b) a plug-in port having a plurality of contacts, at least one of said contacts connected to said first DC power source; and

a plug-in module unit including (a) a plug-in connector having a plurality of contacts adapted for connection to said plug-in port, at least one of said contacts being a power supply contact corresponding to said at least one contact of said plug-in port connected to said first DC power source, (b) a second DC power source, (c) a power utilization device requiring continuous DC power for proper operation, (d) a first power switching means for connecting said power supply contact to said power utilization device when the voltage on said power supply contact exceeds a predetermined value for a predetermined period of time, (e) a second power switching means for connecting said second DC power source to said power utilization device when the voltage on said power supply contact falls below said predetermined value, and (f) a module housing having said plug-in connector, said second power source, said power utilization device, and said first and second power switching means disposed therein.

4,383,185

SWITCHABLE ANALOG SIGNAL INVERTER

Robert J. Brewer, Lyndhurst, England, assignor to U.S. Philips Corporation, New York, N.Y.

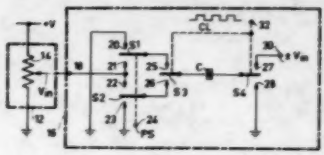
Filed Sep. 11, 1981, Ser. No. 301,157

Claims priority, application United Kingdom, Sep. 19, 1980, 8030316

Int. Cl.³ H03K *3/00*

U.S. Cl. 307—108 **9 Claims**

1. A switchable analog signal inverter comprising a single capacitance having a first side alternately switchable at a clock frequency between a reference voltage point and an output and a second side alternately switchable at the clock frequency between the reference voltage point and an input to which a single polarity voltage is applied, and switching means responsive to a polarity select signal for selectively determining the phasing of the switching between the reference voltage point and input and thereby the polarity of the voltage at the output.



4,383,186

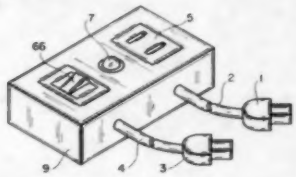
ELECTRICAL SWITCHING APPARATUS

Christopher Liang, 2573 Hallmark, Belmont, Calif. 94002

Filed Feb. 17, 1982, Ser. No. 349,464

Int. Cl.³ H01H *47/00*

U.S. Cl. 307—113 **8 Claims**



1. Electrical switching apparatus which can be easily connected to and disconnected from existing sockets in conventional electrical wiring of a building, and which comprises

(1) a first plug connectable to a first power socket which can be switched on or off by a remote switch which is manually operated at a location remote from the socket;

(2) a first electrical lead connected to the first plug;

(3) a second plug connectable to a second power socket which is normally switched on;

(4) a second electrical lead connected to the second plug; and

(5) a load socket which is connectable to an electrical load and to which the second lead is connected through;

(6) a switching assembly which comprises

(a) a first conductor;

(b) a second conductor;

(c) a first switch which has a first position wherein it is connected to the first conductor and disconnected from the second conductor and a second position wherein it is connected to the second conductor and disconnected from the first conductor;

(d) a first switch-controlling means which is associated with the first switch and with the first lead, whereby when the first plug is connected to the first power socket, the first switch is in its first position when the first power socket is on and in its second position when the first power socket is off;

(e) a second switch which has a first position wherein it is connected to the first conductor and disconnected from the second conductor and a second position wherein it is connected to the second conductor and disconnected from the first conductor; and

(f) a second switch-controlling means which is adjacent to the second switch and which can be manually operated

to move the second switch between its first and second positions

whereby, when the first plug is connected to the first power socket, the second plug is connected to the second power socket and the electrical load is connected to the load socket, the load can be connected to or disconnected from the second power socket either by operating the remote switch or by operating the second switch-controlling means.

4,383,187

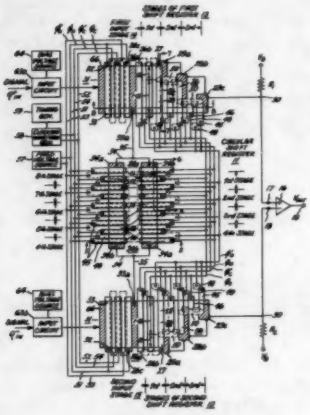
CHARGE TRANSFER FILTER PROVIDING RECURSIVE TRANSFER FUNCTIONS

Thomas L. Vogelsong, Schenectady, and William E. Engeler, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 134,175, Mar. 26, 1980, abandoned. This application May 18, 1981, Ser. No. 264,250

Int. Cl.³ G11C *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 377—57 **10 Claims**



1. Charge transfer apparatus comprising

a plurality of first charge storage cells arranged in a sequence,

means for dividing each of said first charge storage cells into a plurality of parts such that the ratio of the charge stored within a first part thereof to the sum of the charges stored within all of the parts thereof is equal to a respective one of a sequential series of predetermined values,

said sequential series of predetermined values corresponding to a series of weighting coefficients, each weighting coefficient for a respective first charge storage cell,

said plurality of first charge storage cells being serially coupled to form a plurality of stages of a first charge transfer shift register, each stage including a respective first charge storage cell,

a plurality of collection means, each collection means coupled to the first part of a respective first charge storage cell for collecting charge stored therein, selected ones of said plurality of collection means being connected in common,

an input stage including a first charge storage cell coupled to the first stage of said first shift register,

means for providing an input sequence of packets of charge, each packet representing a respective sample of a first signal,

introduction means for sequentially introducing into the first charge storage cell of said input stage at one frequency each of said packets of charge of said first input sequence,

a circular shift register having a plurality of stages, each stage including a first charge storage cell,

means for transferring charge packets from first charge storage cell to first charge storage cell at said one frequency and in one direction in said circular shift register,

said introduction means being synchronized to provide storage of charge packets in the first charge storage cells of said input stage, said first shift register and said circular shift register over a common interval of time, recurrent at said one frequency,

combining means including a conductive connection between the first charge storage cell of said input stage and one of the first charge storage cells of said circular shift register for combining the charge packet in said first charge storage cell of said input stage with the charge packet in said one first charge storage cell of said circuit shift register during each of said common intervals of time to form a respective combined packet of charge,

transferring means for periodically transferring at said one frequency a first part of each of said combined packets of charge to the first charge storage cell of the first stage of said first shift register and for simultaneously transferring at said one frequency a second part of each of said combined packets of charge to the stage of said circular shaft register succeeding said one stage thereof, the capacitance of said first charge storage cell of said input stage being equal to the capacitance of said first charge storage cell of said first stage of said first shift register, the capacitance of said one first charge storage cell of said circular shift register being equal to the capacitance of the first charge storage cell of the succeeding stage of said circular shift register,

said first part of a combined packet of charge being equal to a first fixed fraction, said first fixed fraction being equal to the ratio of the capacitance of said first charge storage cell of said input stage to the sum of the capacitance of said first charge storage cell of said input stage and the capacitance of said one first charge storage cell of said circular shift register,

means for transferring said first parts of charge from stage to stage of said first shift register including transferring to each of said collection means of said first shift register a respective portion of each of said first parts of charge,

said second part of a combined packet of charge being equal to a second fixed fraction, said second fixed fraction being equal to the ratio of the capacitance of said one first charge storage cell of said circular shift register to the sum of the capacitance of said first charge storage cell of said input stage and the capacitance of said one first charge storage cell of said circular shift register,

whereby an output sequence of packets of charge is collected by said collection means connected in common, said output sequence of packets representing the filtered response of said first shift register and said circulating shift register to said input sequence of packets.

4,383,188

VOLTAGE-CONTROLLED CONSTANT CURRENT SOURCE

John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 690,696, Nov. 14, 1978, Pat. No. 4,309,692. This application Dec. 1, 1980, Ser. No. 211,615

Int. Cl.³ H03K *4/00*

U.S. Cl. 307—497 **3 Claims**

1. In an integrating analog-to-digital converter circuit for producing a digital output signal representing the value of an analog input voltage, the converter including a voltage-controlled current source for supplying to an integrator capacitor a capacitor current which alternately equals a fixed value and a value dependent on the analog input voltage, an improvement wherein the voltage-controlled current source comprises:

a current node through which flows the capacitor current;

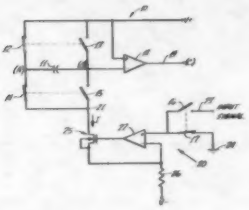
first and second input terminals adapted for receipt of the analog input voltage thereacross;

an amplifier having first and second inputs and an output, one of the two inputs being inverting and the other input being non-inverting;

an input switching circuit for connecting the first amplifier input to the first input terminal when the capacitor current depends on the analog input voltage and to the second input terminal when the capacitor current equals the fixed current value;

a resistor having first and second terminals, the first resistor terminal being connected to the second amplifier input;

means for applying a fixed voltage between the second resistor terminal and the second input terminal; and



a transistor comprising a first transistor terminal, a second transistor terminal and a control terminal such that a voltage between the control terminal and the second transistor terminal affects the amount of a current flowing through the first transistor terminal, wherein one of the first and second transistor terminals connects to the current node, the other one of the two transistor terminals connects to the second amplifier input, and the control terminal connects to the amplifier output;

whereby the fixed value of the capacitor current equals the input-dependent value thereof when the analog input voltage equals zero.

4,383,189

CIRCUIT ARRANGEMENT FOR SUMMING THE POWERS OF TWO ISOFREQUENTIAL MICROWAVE SIGNALS

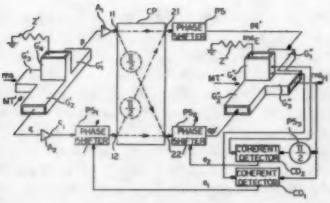
Enzo C. D'Oro, Monza, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Jun. 18, 1982, Ser. No. 389,975

Claims priority, application Italy, Jun. 19, 1981, 22433 A/81

Int. Cl.³ H03G *11/04*; H03K *17/26*

U.S. Cl. 307—529 **6 Claims**



1. A circuit arrangement for summing the powers of two isofrequential microwave signals, comprising:

a first and a second signal path carrying respective microwave signals of identical frequency to be combined;

a directional coupler with a pair of first input ports respectively connected to said signal paths and with a pair of first output ports emitting composite signals each including an in-phase signal component from an associated first input port and a quadrature signal component from the respectively opposite first input port;

a hybrid junction with a pair of second input ports respectively connected to said first output ports and with a pair of second output ports, said hybrid junction combining said composite signals cophasally into a sum signal on one second output port and with relative phase inversion into a difference signal on the other second output port, said sum signal being available for the energization of a load;

a first adjustable phase shifter upstream of said directional coupler in series with one of said first input ports;

a second adjustable phase shifter inserted between one of said first output ports and one of said second input ports;

a first coherent detector with a reference input connected to said one second output port and with a monitoring input connected to said other second output port for emitting a first error signal to a corrective input of said first adjustable phase shifters in response to a difference signal in phase with said sum signal; and

a second coherent detector with a reference input connected to said one second output port and with a monitoring input connected to said other second output port for emitting a second error signal to a corrective input of said second adjustable phase shifters in response to a difference signal in quadrature with said sum signal.

4,383,190

NON-REVERSIBLE ELECTRICAL MACHINE WITH GAS COOLING

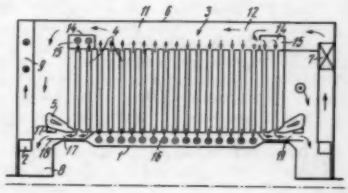
Garri M. Khutoretsky, ulitsa Altaiskaya, 20, kv. 5; Anatoly D. Ignatiev, ulitsa Basseinaya, 35, kv. 162; Elrikh I. Gurevich, ulitsa Kuznetsovskaya, 44, kv. 222; Sergei Y. Shurygin, Malodetskoselsky prospekt, 33, kv. 24; Tamara N. Belova, ulitsa Budapeshtskaya, 3, korpus 2, kv. 138, all of Leningrad, U.S.S.R.; Evgeny M. Azarov, deceased, late of Leningrad, U.S.S.R., and by Ekaterina A. Azarov, administrator, ulitsa Kupchinskaya, 30, korpus 1, kv. 336, Leningrad, U.S.S.R.

PCT No. PCT/SU79/00080, § 371 Date Apr. 29, 1981, § 102(e) Date Apr. 29, 1981, PCT Pub. No. WO81/00649, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 30, 1979, Ser. No. 261,171

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—55 **2 Claims**



1. A non-reversible electrical machine with gas cooling, comprising a body with built-in gas coolers, said body accommodating a stator winding with end connections in end face areas of the body, a rotor whose shaft carries fans provided with exhaust and pressure chambers, and a stator core with radial vent ducts divided, together with a space between it and the body, in a tangential direction into segments associated with the fan exhaust chambers directly via the area of the end connections of the stator winding, and also into other segments which are arranged in alternate relation to said first segments, are equal in number to the latter and are associated with the fan pressure chambers via the gas coolers, characterized in that the radial vent ducts (4) in each area of the stator core (3) juxtaposed to the stator winding end connections (5) being separated from the remaining radial vent ducts (4) by two cylindrical partitions (14, 18), one of said partitions (18) connected to the inner portion of the stator core (3) and being positioned

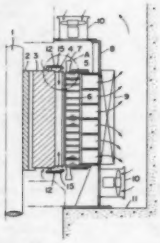
within a gap (16) between the rotor (1) and the stator core (3) and adapted to form, together with the inner surface of the stator core (3) and the end connections (5) of the stator winding, an inner annular cavity (19) which communicates with a fan exhaust chamber (8), the other cylindrical partition (14) being positioned within a space between the stator core (3) and the body (6) and adapted to form, together with the external surface of the stator core (3), an outer annular cavity (15) which communicates with the segments (12), which in turn, communicate with the fan pressure chambers (9), the both annular cavities (15, 19) communicating with each other via the radial vent ducts (4) located in the end area of the stator core (3) which is juxtaposed to the end connections (5) of the stator winding.

4,383,191

DYNAMOELECTRIC MACHINE

Akinori Mizuyama, Komae; Tadahisa Ogita, Yokohama; Shinichi Okazaki, Yokohama, and Tsunetoshi Anan, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 13, 1981, Ser. No. 282,747
Claims priority, application Japan, Jul. 25, 1980, 55-101340
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—59 **7 Claims**



1. In a dynamoelectric machine having a stator including a stator frame, a rotor including salient magnetic poles, and a fan mounted on the axial end portion of the stator frame for forcing the cooling air, which has been cooled by an air cooler, into spaces between the magnetic poles, the air being caused to flow in a direction generally in parallel with the axis of the rotor, the improvement which comprises an annular ventilation air guide cover fixed, by fixing means which has substantially no fan effect, to a yoke of the rotor to cover axial ends of the poles and to form an air chamber between the air guide cover and the axial ends of the poles, whereby the cooling air flows into the air chamber where the air is accelerated to rotate together with the rotor and then flows into the spaces between the poles.

4,383,192

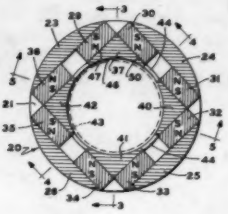
ELECTROMECHANICAL ACTUATOR

Daniel J. Sikorra, Belleair, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 21, 1981, Ser. No. 265,871
Int. Cl.³ H02K *21/28*
U.S. Cl. 310—154 **6 Claims**

1. A stator for a permanent magnet motor comprising, in combination:

a pair of end bells in spaced apposition along an axis; a set of ferromagnetic inner pole pieces secured at their ends to said bells to extend therebetween parallel to said axis, said inner pole pieces having pairs of flat outer surfaces, intersecting at dihedral angles having vertices parallel to said axis, and concave inner curved surfaces comprising peripherally spaced portions of a first cylinder circular on said axis defined by angles less than the supplements of said dihedral angles; flat permanent magnets having inner poles which lie in inner surfaces secured to the flat outer surfaces of said inner pole pieces, said magnets further having outer poles lying in outer surfaces which compose the faces of a prism of rectangular polygonal cross section normal to said axis, said outer faces terminating short of the centers of said faces;



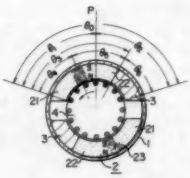
and a set of ferromagnetic outer pole pieces having inner flat surfaces secured to the outer flat surfaces of said magnets, each of said outer pole pieces engaging one flat outer surface of each of two peripherally adjacent magnets to complete a ferromagnetic path from a first inner pole piece through a first magnet, an outer pole piece, and a second magnet to a second inner pole piece, by bridging a gap between said first and second magnets at surfaces of opposite polarity.

4,383,193

FIELD POLE STRUCTURE OF DC MOTOR

Tosio Tomite, Katsuta; Humio Tajima, Ibaraki, and Syuichi Takamastu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,235
Claims priority, application Japan, Sep. 29, 1980, 55-134325
Int. Cl.³ H02K *21/26*
U.S. Cl. 310—154 **2 Claims**

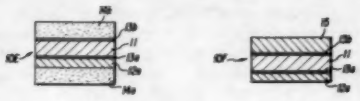


1. A field pole structure of a DC motor having an armature, and a yoke disposed concentrically with the armature, comprising a plurality of field magnetic poles attached to the inner surface of the yoke to oppose the armature, each magnetic pole including a permanent magnet, and an auxiliary pole member coupled to an end of the permanent magnet directed in opposition to the rotational direction of the armature and having permeability higher than a reversible permeability of the permanent magnet, said permanent magnet including a first magnet member disposed at a half of the permanent magnet remote from said auxiliary pole member and made of a magnetic material of large coersive force, and a second magnet member interposed between the first magnet member and the auxiliary pole member and made of a magnetic material of large residual magnetic flux density, wherein said first and second magnet members are formed integrally, and wherein said permanent magnet comprises, in a boundary portion between said first and second magnet members, a region in which the magnetic material of large coersive force and the magnetic material of large residual magnetic flux density are mixed.

4,383,194
ELECTRO-ACOUSTIC TRANSDUCER ELEMENT

Hiroji Ohigashi, Zushi; Joshiharu Nakanishi, Kamakura, and Miyo Suzuki, Fujisawa, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,132
Claims priority, application Japan, May 1, 1979, 54/52475; May 25, 1979, 54/63789
Int. Cl.³ H01L 41/04
U.S. Cl. 310—326 14 Claims



1. An improved electro-acoustic transducer element comprising

a polymeric piezoelectric film having an acoustic impedance Z_o,

elements functioning as electrodes for the film,

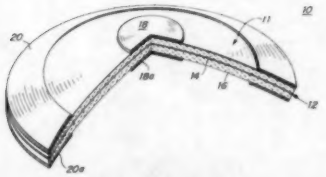
an additional layer having an acoustic impedance Z coupled to the acoustic emanation side of the film and having a thickness of from 0.5 μm to 3λ/8 in which λ refers to the wavelength of sound waves within the additional layer at the free resonant frequency of the film, and

the acoustic impedance Z of the additional layer being not less than two times the acoustic impedance Z_o of the film.

4,383,195
PIEZOELECTRIC SNAP ACTUATOR

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Oct. 24, 1980, Ser. No. 200,390
Int. Cl.³ H01L 41/08
U.S. Cl. 310—330 2 Claims



1. A piezoelectric actuator comprising:

a piezoelectric bender element;

a dish-shaped snap-action device for exerting a positive force in opposition to said piezoelectric bender element and having a predetermined reaction force that must be overcome to cause the snap action, said piezoelectric bender element being mounted on said snap-action device and including piezoelectric means for providing an opposing force to said snap-action device in excess of said reaction force;

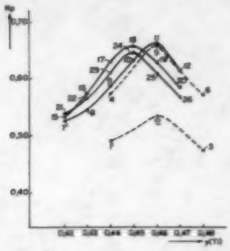
contact means operated by said piezoelectric bender element; and

means, including a pair of electrodes one proximate the center and one proximate the edge of said piezoelectric member, for applying an electric field to said piezoelectric means to enable it to generate said opposing force and store energy in said snap-action device to enable occurrence of the snap action to open and close said contact means.

4,383,196
PIEZOELECTRIC CERAMIC BODY FOR AN ELECTROMECHANICAL TRANSDUCER

David J. Perduijn, and Jacobus Verberkt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 149,784, May 14, 1980. This application Jun. 17, 1982, Ser. No. 389,201
Claims priority, application Netherlands, May 21, 1979, 7903964
Int. Cl.³ H01L 41/08
U.S. Cl. 310—358 2 Claims



1. An electromechanical transducer comprising a piezoelectric body corresponding to the ternary system lead titanate-lead zirconate—$Pb(M^{II}_{\frac{1}{3}}M^{V}_{\frac{2}{3}})O_3$, and electrodes attached to said body, characterized in that said piezoelectric body consists of $Pb_{1-a}M_a(Mg_{(1-b)/3}Mn_{b/3}Sb_{\frac{2}{3}})_xTi_yZr_zO_3$, wherein M is one or more of the alkaline earth metals Ca, Sr and Ba, and wherein

$0 \leqq a \leqq 0.15$,

$0 \leqq b \leqq 0.20$,

$0.01 \leqq x \leqq 0.25$,

$0.40 \leqq y \leqq 0.55$,

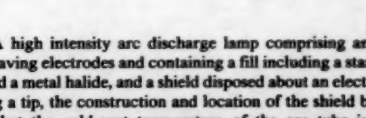
$0.20 \leqq z \leqq 0.59$ and

$(x+y+z)=1$.

4,383,197
METAL HALIDE ARC DISCHARGE LAMP HAVING SHIELDED ELECTRODE

W. Calvin Gungle, Danvers; William M. Keeffe, Rockport, and Dale E. Work, Topsfield, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 2, 1978, Ser. No. 956,950
Int. Cl.³ H01J 61/10, 61/18
U.S. Cl. 313—38 1 Claim

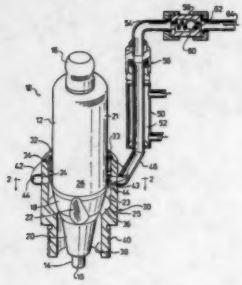


1. A high intensity arc discharge lamp comprising an arc tube having electrodes and containing a fill including a starting gas and a metal halide, and a shield disposed about an electrode having a tip, the construction and location of the shield being such that the cold-spot temperature of the arc tube is not significantly lowered by the presence of said shield, said shield being heated to incandescence during normal lamp operation.

4,383,198
FUEL INJECTION SPARK PLUG

John H. Hosking, 451 Sunset Dr., Oakville, Ontario, Canada (L6L 3N3)

Filed Jun. 8, 1981, Ser. No. 271,348
Int. Cl.³ H01T 13/02
U.S. Cl. 313—120 9 Claims

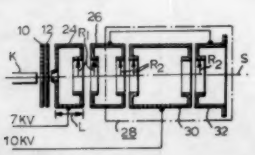


1. A fuel injection spark plug assembly comprising, an elongated insulating body having an electrode extending axially therethrough and projecting from each end of the insulating body; a circumferential shoulder formed on said insulating body in proximity to one end thereof, said end of the insulating body being tapered from the shoulder to adjacent the projecting end of said electrode; a metallic shell having a hollow threaded end for securing said spark plug in a combustion chamber opening, said shell adapted to receive and envelop the shoulder, a portion of the insulating body adjacent the shoulder and the tapered end of the insulating body, said metallic shell having a peripheral plenum in communication with the interior of the shell; a plurality of substantially longitudinal equispaced slots formed across at least a portion of the shoulder defining passages with the metallic shell to permit a gaseous fuel to flow from said plenum through the slots to the tapered end of the insulating body and through the hollow threaded end of the shell; a conduit for supplying a gaseous fuel under pressure to said plenum; and valve means provided in said conduit remote from said spark plug for permitting the flow of a gaseous fuel towards said spark plug while preventing the flow of gaseous combustion products in a direction away from the spark plug.

4,383,199
ELECTRON GUN

Shoichi Washino, Hyogo, and Eisho Nosaka, Kyoto, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 966,046, Dec. 4, 1978, Pat. No. 4,246,511. This application Apr. 29, 1980, Ser. No. 144,935
Int. Cl.³ H01J 29/46, 29/56
U.S. Cl. 315—15 1 Claim

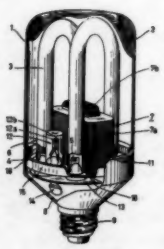


1. An electron gun comprising a main electron lens and an electron lens preceding said main electron lens and said preceding electron lens including at least an acceleration type electron lens portion, said acceleration type electron lens portion having the principal plane of the object space thereof located adjacent to the position of the virtual object point of the outermost electron ray of the electron beam incident upon said acceleration type electron lens portion; wherein said acceleration type preceding lens is disposed between a triode portion formed of a cathode electrode, first and second electrodes, and said main electron lens, and wherein said acceleration type preceding lens includes a first grid electrode and a second grid electrode and said gun comprises a means for either variably adjusting a length of said first grid electrode in the axial direction of said electron beam with a constant ratio of a voltage applied to said first grid electrode with respect to a voltage applied to said second grid electrode or for variably adjusting the ratio of said voltage applied to said first grid electrode with respect to said voltage applied to said second grid electrode with said axial length of said first grid electrode being maintained constant; wherein said variably adjusting means is adjusted so as to place said principal plane on said object side at said position of said virtual object point of said outermost electron ray of said electron beam.

4,383,200
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Adrianus J. H. J. Van Zon, Eindhoven, and Johannes R. Gelens, Terneuzen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,321
Claims priority, application Netherlands, Mar. 28, 1980, 8001833
Int. Cl.³ H05B 41/16
U.S. Cl. 315—57 9 Claims



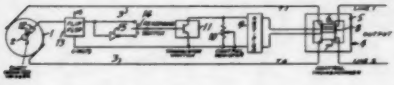
1. A low-pressure mercury vapor discharge lamp including a lamp envelope member, a discharge tube therein which is closed in a vacuum-tight manner and contains mercury and a rare gas, electrodes between which a discharge takes place during operation being arranged one at each end of the discharge tube, an electric stabilization ballast for the discharge, and a hollow lamp base member which is connected to the envelope member and a lampcap member for fitting the lamp in a luminaire, and a metal plate, at least the electric stabilization ballast and the ends of the discharge tube being connected to the metal plate, the metal plate being arranged near the connection of the lamp base member to the lamp envelope member and extends to one of said members, the metal plate having upright walls with which one or more walls of the ballast are in intimate thermal contact.

4,383,201

LIGHT FLICKER ELIMINATING CIRCUIT

George M. Brandon, Charlotte, N.C., assignor to Textron Inc., Providence, R.I.

Filed Apr. 21, 1981, Ser. No. 256,122
Int. Cl.³ B60Q 1/26; G05F 1/00
U.S. Cl. 315—078 10 Claims



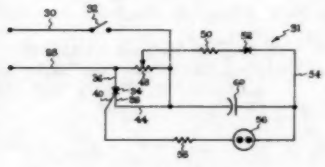
1. Voltage regulating circuit for an electric generator driven by an internal combustion engine having a drive shaft the rotational speed of which is periodically higher in a power stroke than in an exhaust stroke, said circuit comprising an output transformer having an input connected with the output of said generator, an output connected with a load and a control winding, control circuit means connected with said control winding to control the flow of current therethrough and thereby modify the output voltage of said transformer and means synchronized with said engine for cyclically implementing said control circuit to reduce the output voltage of said secondary winding during the power stroke of said engine to a value equal to said voltage during the exhaust stroke.

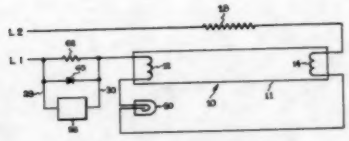
4,383,202

FLASHING FLORESCENT LAMPS

Charles E. Beck, Chesterland, and Richard T. Kadlec, Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,002
Int. Cl.³ H05B 41/30
U.S. Cl. 315—200 A 17 Claims





1. A flasher apparatus for use with a fluorescent lamp having electrode terminals at each end, comprising:

(a) a switch means connected in one lead of the line cord supplying current to the lamp, the switch means being periodically operable in a first, current-conducting mode where current is permitted to flow in only one direction through the lead and a second, non-current-conducting mode;

(b) a control means for operating the switch means, the control means periodically switching the switch means between the first and second modes;

(c) a rectifier connected in parallel with the switch means, the rectifier permitting current to flow through the lead in a direction opposite to that direction in which current is permitted to flow by the switch means; and

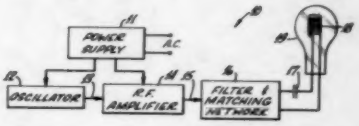
(d) a resistor connected in parallel with the switch means, the resistor permitting sufficient current flow during those times that the switch means is in the second mode that the lamp is flashed and deionization of the lamp is prevented, the resistor being bypassed when the switch means is in the first mode so that the lamp operates at full power.

4,383,203

CIRCUIT MEANS FOR EFFICIENTLY DRIVING AN ELECTRODELESS DISCHARGE LAMP

Charles A. Stanley, San Jose, Calif., assignor to Litek International Inc., Hayward, Calif.

Filed Jun. 29, 1981, Ser. No. 278,888
Int. Cl.³ H05B 41/24; H03H 7/01
U.S. Cl. 315—248 21 Claims



17. In an electrodeless discharge lamp of the type including an ionizable medium within a sealed envelope capable of emitting radiant energy when subjected to a radio frequency field, an oscillator for generating an output signal at a given radio frequency, an RF amplifier responsive to said oscillator output signal, and an induction coil responsive to the output of said amplifier, said coil being positioned in close physical proximity to said medium in said envelope for coupling to said medium an electric field having a magnitude sufficient to initiate ionization of said medium and a magnetic field for maintaining said ionization, the improvement wherein said amplifier is a Class D amplifier including first and second transistors connected in series and driven alternately on and off by said oscillator output signal, and further comprising:

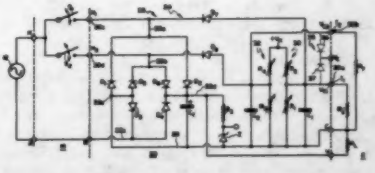
a combination filter and matching network operatively coupled between the junction between said transistors and said induction coil for presenting a low impedance to said given radio frequency and a higher impedance to all other frequencies and for matching the impedance of the output of said RF amplifier to the reflected resistance of said discharge in said envelope.

4,383,204

THREE-LEVEL INTERFACE CONTROL CIRCUIT FOR ELECTRONICALLY BALLASTED LAMP

Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,779
Int. Cl.³ H05B 37/02, 41/36
U.S. Cl. 315—291 18 Claims



1. An interface control circuit for use with a three-way lamp socket, having a four-position switch means settable to off, dim, medium and high positions, for providing separate power

and control potentials to separate power and control input terminals of a dimmable electronic ballast-lamp load from an A.C. source, comprising:

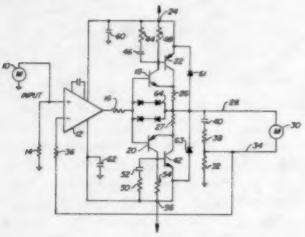
a power supply subcircuit for supplying operating potential to said load power input terminals when said switch means is set at each one of said dim, medium and high positions; and

a load level-setting subcircuit for supplying a selected one of three different level-setting potentials to said load control input terminals, each different potential being supplied responsive to said switch means being set at a different one of said dim, medium and high positions.

4,383,205
MOTOR DRIVE AMPLIFIER

Barrett E. Guisinger, Saratoga, Calif., assignor to Sony Corporation, Japan

Filed Nov. 25, 1981, Ser. No. 324,774
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **10 Claims**



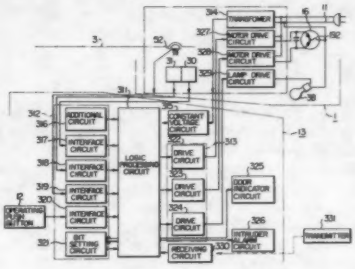
1. In combination with a load, a drive amplifier circuit for driving the load in response to a drive input signal, the amplifier circuit comprising a circuit ground, a differential amplifier having an inverting input terminal, a non-inverting input terminal for receiving a drive input signal, and an output terminal, dual, super-alpha configured current amplifiers of opposite polarities, each having a separate input terminal and a separate output terminal, first resistance means connected in series with the load between the outputs of the super-alpha configured amplifiers and the circuit ground, means connecting the inverting input of the differential amplifier to a point in the series connection between the load and the first resistance means, and wherein the output of the differential amplifier is connected to the inputs of the super-alpha configured current amplifiers, whereby, when said drive input signal is applied to the non-inverting input of the differential amplifier, a current equal to the voltage magnitude of the drive input signal divided by said first resistance means will flow through the load.

4,383,206
DOOR OPERATION CONTROL APPARATUS

Shigeru Matsuoka; Takeshi Tokunaga; Seiji Yonekura; Koji Yamauchi, and Mitsuo Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,425
Claims priority, application Japan, Jul. 9, 1980, 55-92724
Int. Cl.³ G05D *3/08*
U.S. Cl. 318—445 **4 Claims**

1. A door operation control apparatus comprising door drive means and control means for controlling said door drive means, said control means including an output control circuit for controlling said door drive means in such a manner as to effect selected one of the opening, stopping and closing of said door, condition detector means for detecting various conditions of selected one of the door and the door drive means, door operation command means, and a signal processing circuit for effecting logic decision on a signal from said condition detector means and said door operation command means thereby to control said output control circuit, said signal processing circuit stepping forward the repetitive operating cycle of door opening, stoppage, closing and stoppage in response to each command signal applied thereto from said operation command means, said signal processing circuit further controlling said output control circuit in such a manner as to open said door in response to an obstruction detection signal from said condition detector means indicative of the fact that the door

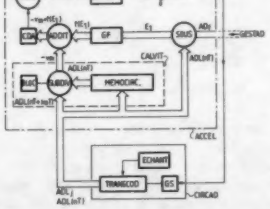


closing operation has been prevented, said signal processing circuit including means for processing signals in such a manner as to open said door for a predetermined length of time in response to said obstruction detection signal and means for processing signals in such a manner as to control said output control circuit so that the door is opened again in response to a command signal from said door operation command means if the door is stationary after said opening operation by said obstruction detection signal.

4,383,207
APPARATUS AND METHOD FOR DISPLACING MOVABLE SYSTEM WITH RESPECT TO A DATA CARRIER

Christian Maury, Velizy, France, assignor to CII-Honeywell Bull, Paris, France

Filed Sep. 11, 1980, Ser. No. 186,294
Claims priority, application France, Sep. 21, 1979, 79 23579
Int. Cl.³ G05B *13/00, 13/02, 6/02*
U.S. Cl. 318—560 **23 Claims**



1. A method for displacing a movable system with respect to a data carrier on which are recorded a plurality of tracks having addresses written within a plurality of reference zones, the number of reference zones being at least equal to the number of tracks, each track being associated with at least one zone, the movable system being driven by a motor and com-

prising at least one data read head which is displaced from a starting track to an address arrival track ADL_f, addresses read by the head during displacement thereof by the motor being designated by ADL_j, said method comprising calculating an acceleration instruction γ_c in response to read addresses ADL_j at predetermined sampling instants, measuring the acceleration $\bar{\gamma}$ of the system, comparing the accelerations γ_c and $\bar{\gamma}$, and controlling the motor as a function of the comparison between γ_c and $\bar{\gamma}$.

4,383,208

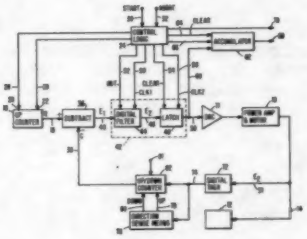
DYNAMIC DETERMINATION OF FRICTION IN A CLOSED LOOP CONTROL SYSTEM

Marlin C. Nielson, Boulder County, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 108,738, Dec. 31, 1979. This application Oct. 20, 1981, Ser. No. 313,125

Int. Cl.³ G05B 5/01

U.S. Cl. 318—618 **7 Claims**



1. Device for dynamically measuring the friction associated with an electromechanical system comprising in combination:

an electromechanical system including a motor;

controller means operable to generate a controlled input signal for driving said motor;

means disposed in a feedback loop operable for monitoring the output of said motor and for generating a feedback signal;

means for receiving the controlled signal and the feedback signal and to generate an error signal therefrom; and

digital filtering means for receiving the error signal and operable to control the phase and magnitude of said error signal, said digital filtering means having a filter being characterized by the mathematical expression:

$$D(z) = \frac{z}{z-1}\left(10.2\,\frac{z^2 - 1.8z + 0.82}{z(z + 0.81)}\right)$$

Wherein:

D(z) represents the transfer function of the filter,

$z/(z-1)$ represents a discrete integrator,

$$\left(10.2\,\frac{z^2 - 1.8z + 0.82}{z(z + 0.81)}\right)$$

represents the stabilizing factor for the feedback loop; and

a latch circuit disposed between the digital filtering means and the electromechanical system, said latch circuit being operable to store a signal outputted from the filtering means.

4,383,209

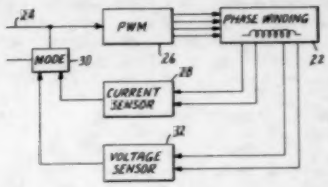
CONTROL SYSTEM FOR TRANSDUCER POSITIONING MOTOR

Martyn A. Lewis, Pacific Palisades, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 15, 1980, Ser. No. 197,184

Int. Cl.³ G05B 5/00, 6/00

U.S. Cl. 318—696 **15 Claims**



1. In combination with an apparatus for positioning a transducer in relationship to a plurality of parallel tracks on a record media, said transducer being moveable between successive ones of said parallel tracks, where the position of said transducer is controlled by a motor, a control system for said motor comprising:

current control means having a high output impedance for controlling said motor by supplying to said motor a programmable current relatively independent of instantaneous inductively and motionally induced emf in said motor;

voltage control means having a low output impedance for controlling said motor by supplying a programmable voltage relatively independent of instantaneous current in said motor; and

switching means for selecting said current control means when said transducer is making coarse adjustments in position relative to a selected one of said parallel tracks and for selecting said voltage control means when said transducer is making fine adjustments in position relative to said selected one of said parallel tracks.

4,383,210

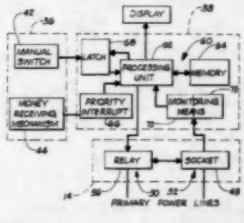
APPARATUS AND METHOD FOR RECHARGING AN ENERGY STORAGE DEVICE

Rudolph P. Wilkinson, 623 Frensley, Ardmore, Okla. 73401

Filed Jun. 18, 1980, Ser. No. 160,909

Int. Cl.³ B65G 11/00; H02J 7/00

U.S. Cl. 320—2 **17 Claims**



1. An apparatus for recharging an energy storage device from a primary power source with a selectable quantity of power, comprising:

activation means for selecting a quantity of power to be delivered from said primary power source to said storage device;

outlet means, switchably connected to said primary source,

for electrically connecting said apparatus and said storage device; and

electronic control means, responsive to said activation means, for controlling the switchable connection of said outlet means with said primary power source, said electronic control means including: current monitoring means for determining the amount of current passing through said outlet means during a predetermined time period; and

current stopping means, responsive to said current monitoring means, for disconnecting the switchable connection between said outlet means and said primary power source when said current monitoring means determines the current flowing through said outlet means during the predetermined time period is not greater than a predetermined value.

17. A method of dispensing electrical power from an outlet in prepurchased quantities, comprising the steps of:

receiving a token;

determining the quantity of power purchase by said token;

calculating the quantity of power dispensed from said outlet;

determining the difference between the quantity of power purchased and the quantity of power dispensed;

electrically connecting said outlet to a primary power source when the calculated difference is greater than a predetermined value;

disconnecting said outlet from said primary power source when the difference is less than or equal to the predetermined value;

monitoring a voltage in said outlet;

monitoring the current passing through said outlet during a predetermined time period; and

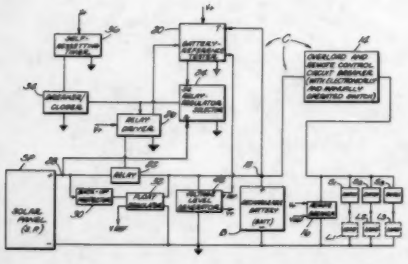
disconnecting said outlet from said primary power source when the current passing through said outlet during the predetermined time period is not greater than a predetermined current value and the voltage in the outlet is greater than a predetermined voltage value.

4,383,211

ELECTRICAL CHARGING AND DISCHARGING CONTROL APPARATUS AND METHOD, AND SOLAR TO ELECTRICAL ENERGY CONVERSION APPARATUS INCORPORATING SUCH APPARATUS

Terry Staler, Tarzana, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 2, 1981, Ser. No. 222,208
Int. Cl.³ H02J 7/32
U.S. Cl. 320—9 **23 Claims**



1. Apparatus for controlling the charging of a rechargeable electrical energy storage device for generating a storage device electrical signal, by an electrical energy source for generating a source electrical signal, said source having a charging output terminal and said device having a charging input terminal, said apparatus including:

relay means for electrically coupling the charging output terminal of the source and the charging input terminal of the device to permit said charging through said relay means;

regulator means for electrically coupling the charging output terminal of the source and the charging input terminal of the device to permit said charging through said regulator means and for providing an electrical regulated output signal for said charging;

signal-testing means coupled to said relay means for receiving the storage device electrical signal and for providing an electrical output signal for terminating said coupling by said relay means in response to the storage device electrical signal;

selector means, coupled to said relay means and responsive to the storage device electrical signal, for receiving the source electrical signal and for providing an electrical selector signal for selecting said relay means coupling to permit said charging through said relay means and for selecting said regulator means coupling to permit said charging through said regulator means in response to the source electrical signal and the storage device electrical signal;

relay breaker means coupled to said relay means for providing an electrical relay breaker signal for breaking said coupling by said relay means after said coupling by said relay means for a predetermined period of time; and

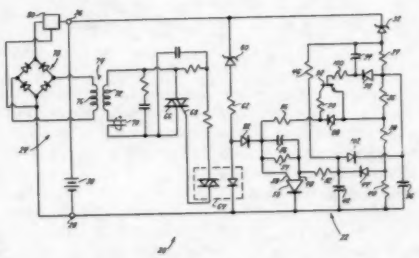
relay driver means coupled to said relay means for providing an electrical control signal for controlling said coupling by said relay means in response to said selector signal and said breaker signal.

4,383,212

BATTERY CHARGER CONTROL DEVICE WITH D-C DISCONNECT AND A-C INTERRUPT

Gray C. Ballman, 30 Portland Dr., Frontenac, Mo. 63131

Continuation-in-part of Ser. No. 914,408, Jun. 12, 1978. This application Jul. 14, 1980, Ser. No. 168,056
Int. Cl.³ H02J 7/00
U.S. Cl. 320—30 **10 Claims**



1. A battery charger having positive and negative terminals to connect to a battery desired to be recharged, the battery charger having an electronic control circuit with connections to said positive and negative terminals, a power circuit with connections to said positive and negative terminals, said power circuit having means to deliver at least partially rectified A-C current through said terminals and to said battery, an A-C power connector through which A-C power is supplied to said power circuit, said control circuit having means to switch said A-C power to disconnect A-C power from the power circuit, said A-C power switching means having a control lead, a diode connected between said positive terminal and the control lead of said A-C power switching means, said A-C power switching means including an electronic switch means in circuit with said diode, said rectified A-C current having a sufficient A-C component so that its instantaneous voltage drops below the conduction voltage of said diode so that if the battery is disconnected from the positive terminal, the diode goes into a nonconductive state thereby causing said electronic switch means to switch off to disconnect said A-C power from said power circuit, thereby shutting off said battery charger.

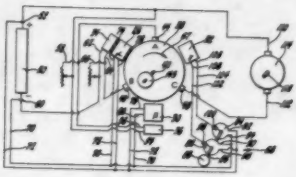
4,383,213
TRIODYNE

Joseph M. Tyrner, 20 Tingley, Morristown, N.J. 07960

Continuation-in-part of Ser. No. 221,422, Dec. 30, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 288,256

Int. Cl.³ H02P 9/10, 9/14, 7/16, 3/14

U.S. Cl. 322—53 13 Claims



1. Electrical control equipment for controlling the power supplied to a load, said equipment comprising in combination a field structure and an armature concentrically related and mounted for relative rotation one with respect to the other, said field structure including one or more sets of poles with each set consisting of a first, a second and a third pole, all of said poles being equidistantly spaced circumferentially around said field structure, a commutator connected to said armature and engaged by sets of brushes, with each set consisting of a first, a second and a third brush, corresponding respectively to said first, second and third pole, there being a set of brushes for each set of poles, said brushes being equidistantly spaced circumferentially with respect to said commutator, said first and second brushes being provided with means for establishing connection with respective terminals of a source of electrical power, said first and third brushes being provided with means for establishing connection to respective terminals of said load for furnishing electrical power thereto, there being at least one excitation winding on each of said poles, means connected to said excitation windings on said first and second poles for coupling said last mentioned windings to a source of energization for establishing first and second poles of fixed and opposite magnetic polarity, and said windings on said third poles are provided with means for changing the field current in said windings from excitation of one polarity to excitation of the opposite polarity and through all excitation levels inbetween, to change the voltage delivered to said load.

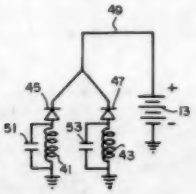
4,383,214
MAGNETO BATTERY TRICKLE CHARGER

John N. MacLeod, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 25, 1980, Ser. No. 190,899

Int. Cl.³ H02J 7/00; H02K 21/22; H02P 9/00

U.S. Cl. 322—58 2 Claims



1. In an internal combustion engine powered device having an engine flywheel, a storage battery, battery energizable engine starter, and an engine ignition system including three laminated stator core legs having their respective first ends in close proximity to the engine flywheel and their respective second ends magnetic-coupled together with the three stator core legs being generally coplanar and extending generally parallel to one another with an ignition coil on a middle one leg and with flywheel supported magnetic means comprising a permanent magnet having a pair of magnetic poles and supported near the outer periphery of the flywheel for magnetically coupling the leg first ends together from time to time to induce an ignition voltage in the ignition coil, the stator core leg first ends being positioned closely adjacent the flywheel outer periphery and having an angular separation relative to the flywheel axis substantially the same as the angular separation between the effective peripheral locations of the permanent magnet poles, an arrangement for charging the storage battery during engine operation comprising a pair of charging coils surrounding the other stator core legs, a pair of rectifiers each coupled to a charging coil, a pair of capacitors, each connected directly in parallel with a charging coil, and means for conveying a varying unidirectional current from each coupled rectifier and charging coil to the battery with the parallel combinations of the charging coils and capacitors being connected directly in series with the respective rectifier and the battery to form a closed loop circuit whereby current may flow directly from each parallel connected coil and capacitor by way of the rectifier to the battery without passing through any other circuit elements to charge the battery with two primary charging pulses during each revolution of the flywheel.

4,383,215
DIRECT-CURRENT, SELF-CONTAINED, MOBILE POWER SUPPLY SYSTEM

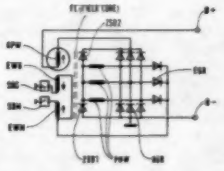
Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,411

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035819

Int. Cl.³ H02P 9/10, 9/30

U.S. Cl. 322—63 6 Claims



1. Direct-current power supply system for self-contained electrical networks, particularly for mobile applications, having

a generator having armature windings (PHW);

a compound winding (KPW) serially connected to the output of the generator and having load current flowing therethrough;

a main voltage regulator (SRM) connected to the output of the generator and sensing when the voltage of the generator drops below a predetermined level;

and comprising, in accordance with the invention,

a two-part exciter winding (EWM, EWC), the main voltage regulator (SRM) being connected to one of said winding parts (EWM) and controlling current flow therethrough to provide an excitation field for the generator if its voltage drops below the predetermined level;

and an over-voltage regulator (SRC) connected to the output of the generator, said over-voltage regulator being connected to and controlling current flow through the second exciter winding (EWC) to provide an excitation field for the generator counter the direction of the magnetic field due to current flow in the compound winding

(KPW), the over-voltage regulator being responsive to output voltages of the generator above a pre-set value.

4,383,216

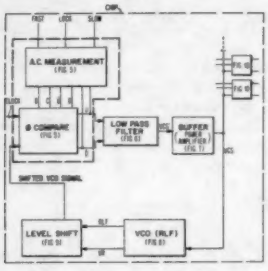
AC MEASUREMENT MEANS FOR USE WITH POWER CONTROL MEANS FOR ELIMINATING CIRCUIT TO CIRCUIT DELAY DIFFERENCES

Jack A. Dorler, Wappingers Falls, N.Y.; Michael O. Jenkins, San Jose, Calif.; Joseph M. Mosley, Hopewell Junction, and Stephen D. Weitzel, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,417

Int. Cl.³ G05F *1/46*

U.S. Cl. 323—282 **11 Claims**



1. In an electronic system an integrated circuit chip, said integrated circuit chip including delay regulator means and at least first, second and third interconnected logic circuits, each said logic circuit on said chip having a speed/power characteristic,

a source of periodic clock pulses,

said delay regulator means of said integrated circuit chip being adapted to receive said periodic clock pulses,

said delay regulator means including active circuit means for generating an electrical manifestation related to the periodicity of said periodic clock pulses and said speed power characteristic, and

said delay regulator means including additional circuit means responsive to said electrical manifestation for rendering a first indication that said logic circuits on said chip are capable of operating at a speed faster than said periodicity of said periodic clock pulses or a second indication that said logic circuits on said chip are not capable of operating at a speed equal to or greater than said periodicity of said clock pulses.

4,383,217

COLLINEAR FOUR-POINT PROBE HEAD AND MOUNT FOR RESISTIVITY MEASUREMENTS

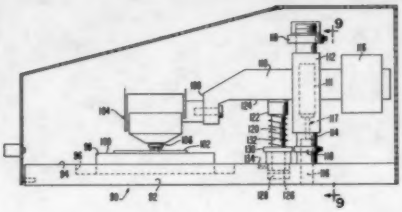
Thomas J. Shiell, P.O. Box 504, Menlo Park, Calif. 94025

Division of Ser. No. 38, Jan. 2, 1979. This application May 4, 1981, Ser. No. 260,468

Int. Cl.³ G01R *31/22*

U.S. Cl. 324—158 F **7 Claims**

1. A mount for a resistivity probe comprising: a base plate; means on said base plate for shiftably mounting a semiconductor wafer in an operative position thereon; a post secured to and extending upwardly from said base plate at a location spaced from said wafer mounting means; an arm; a tube shiftably mounted on the post and a crossbeam extending laterally from the tube, said crossbeam being coupled with the arm for mounting the same for up and down movement with the tube on the post, said arm extending laterally from the crossbeam and having an outer end provided with a probe head thereon, the probe head being above and generally vertically aligned with said operative position, there being a pair of stops adjustably carried by the post to limit the vertical movement of the tube on the post; and means carried by said base plate below said arm for moving the same up and down relative to said base plate to thereby cause the probe head to be raised and lowered



relative to said operative position, there being a control device coupled with the arm to allow it to descend at a controlled rate.

4,383,218

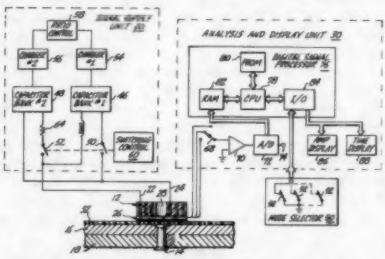
EDDY CURRENT FLOW DETECTION INCLUDING COMPENSATION FOR SYSTEM VARIABLES SUCH AS LIFT-OFF

Karl A. Hansen, and Iver G. Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 974,356, Dec. 29, 1978, Pat. No. 4,271,393. This application Sep. 30, 1980, Ser. No. 192,251

Int. Cl.³ G01N *27/90*; G01R *33/12*

U.S. Cl. 324—225 **8 Claims**



1. An eddy current inspection system for detecting the presence of subsurface regions within a body wherein the region to be detected is of a different electrical conductivity than portions of said body that surrounds said region to be detected, said eddy current inspection system comprising:

drive coil means positionable on the surface of said body to be inspected, said drive coil means being configured for inducing a magnetic field that is directed inwardly into an inspected region of said body in response to an applied drive signal;

electrical signal supply means interconnected with said drive coil for supplying said drive signal, said electrical signal supply means including means for supplying said drive signal as a current pulse having a relatively long rise time and a substantially shorter fall time;

magnetic flux detection means positionable on said surface of said body being inspected at a location proximate to said drive coil means, said magnetic flux detection means for supplying an inspection signal representative of the eddy currents produced in said body subsequent to that portion of said drive current exhibiting said short fall time; and

analysis and display means for indicating the presence of a subsurface region of different continuity, said analysis and

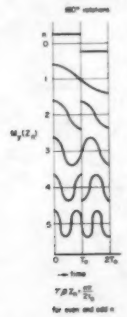
display means connected for receiving said inspection signal supplied by said magnetic detection means, said analysis and display means including signal compensation means for compensating each said inspection signal for variations in a selected inspection system characteristic that affects the electromagnetic environment of said eddy current inspection system, said signal compensation means including means for compensating said inspection signal on the basis of first and second parametric relationships, said first parametric relationship being determined by the maximum amplitude of inspection signals supplied by said magnetic flux detection means when a subsurface region's of different electrical conductivity is present, said second parametric relationship being determined by the maximum amplitude of inspection signals supplied by said magnetic flux detection means when variations in said selected inspection system characteristic are known to be present.

4,383,219

NUCLEAR MAGNETIC RESONANCE SPATIAL MAPPING

Jerome I. Kaplan, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Aug. 19, 1980, Ser. No. 179,423
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **8 Claims**



1. A method of obtaining a spatial mapping of a sample utilizing nuclear magnetic resonance comprising:

generating a magnetic gradient field, which is time dependent, except in a substantially linear region wherein the magnetic field is time independent and varies monotonically with distance along its length, the linear region disposed at least partially within the sample;

applying an RF pulse to flip the magnetization of the sample 180 degrees from the direction of the magnetic field;

applying a 90 degree RF pulse to flip the magnetization of the sample into the plane perpendicular to the direction of the magnetic field after an interval ΔT;

applying at least two RF pulses, each of which flips the magnetization through an angle of 180 degrees and each of which occurs at an interval T_o after the previous RF pulse;

receiving a signal resulting from the resonance; and

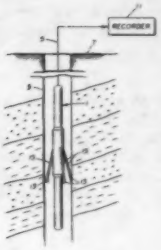
analyzing the signal to obtain a measure of the RF absorption as a function of the resonance frequency.

4,383,220

MICROWAVE ELECTROMAGNETIC BOREHOLE DIPMETER

Willett F. Baldwin, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 36,915, May 7, 1979, abandoned. This application Sep. 3, 1981, Ser. No. 299,235
Int. Cl.³ G01V *3/30*
U.S. Cl. 324—338 **9 Claims**



1. A system for determining the dip of subsurface earth formations penetrated by a borehole, comprising:

(a) a borehole tool adapted for movement through said borehole and having at least three antenna arrays positioned from the longitudinal axis of said tool and spaced approximately equally around said axis, each of said antenna arrays having only one transmitting antenna and one receiving antenna spaced longitudinally one from the other, no more than three inches, said tool being adapted for supporting and positioning said at least three antenna arrays against the wall of said borehole;

(b) means for simultaneously supplying electromagnetic energy of a frequency within the range of 1.0 to 3.0 GHz to each of said transmitting antennas for transmitting said electromagnetic energy into said earth formations; and

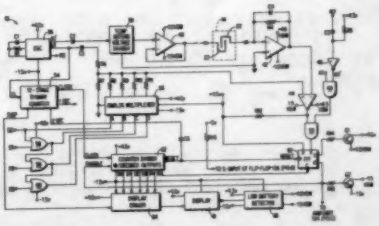
(c) means coupled to each of said receiving antennas for detecting the signal received by each receiving antenna from which signals the dip may be determined.

4,383,221

WATER RESISTIVITY SENSOR

Kenneth H. Morey, Framingham, and Steven C. Dark, Groton, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Oct. 21, 1980, Ser. No. 199,277
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—439 **21 Claims**



1. A water resistivity sensor for indicating the resistivity of water comprising:

electrode means for generating a signal proportional to the resistivity of the water;

circuit means for processing said signal from said electrode means and issuing an output signal corresponding to the

resistivity of the water, wherein said electrode means comprises a reference circuit sequentially providing successive voltage values corresponding to successive, resistivity values, and a voltage comparator connected to said electrode means and to said reference circuit for comparing said signal from said electrode means to each successive voltage value so as to determine that one of said successive voltage values approximates said signal from said electrode means, whereby the resistivity of the water is determined; and

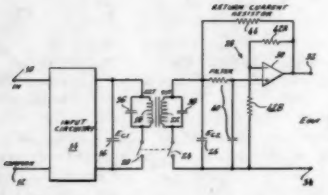
display means responsive to said output signal of said circuit means for displaying the resistivity of the water.

4,383,222

HALF-WAVE SIGNAL ISOLATOR WITH COMPENSATOR MEANS TO REDUCE TEMPERATURE-DEPENDENT EFFECTS

William H. Morong, III, Newton, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Nov. 3, 1980, Ser. No. 203,476
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—9 **8 Claims**



1. In a signal isolator of the half-wave type comprising a coupling transformer having primary and secondary windings; first and second switches connected to said transformer windings, respectively, one of said switches serving to modulate a signal applied to the transformer primary and the other serving to demodulate the signal developed at the secondary of said transformer; means for driving said switches in synchronism at a relatively high frequency; and output circuit means coupled to said transformer secondary and operable to produce an output signal corresponding to the input signal;

that improvement in such signal isolator comprising:

return current means connected between said output circuit means and said transformer secondary for directing to said transformer secondary a current responsive to said output signal to augment supplying of the losses in the coupling circuitry.

4,383,223

CMOS OPERATIONAL AMPLIFIER EMPLOYING PUSH-PULL OUTPUT STAGE

Richard W. Ulmer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 10, 1980, Ser. No. 138,968
Int. Cl.³ H03F *3/45, 3/26*
U.S. Cl. 330—253 **8 Claims**

1. A CMOS operational amplifier, comprising:

a differential stage having first and second inputs and first and second outputs, said first and second inputs for receiving first and second input voltages;

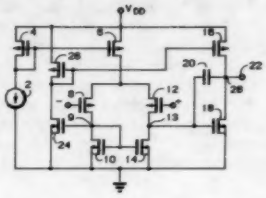
a first field-effect transistor having its current conducting path coupled between said second output and ground, and the gate electrode thereof coupled to said second output;

a second field-effect transistor having its current conducting path coupled between said first output and ground, and the gate electrode thereof coupled to the gate electrode of said first field-effect transistor;

first means coupled to said differential state and to a supply voltage terminal for supplying a constant current to said differential stage;

a push-pull output stage coupled to said supply voltage terminal and having third and fourth inputs, said third input coupled to said first output; and

third and fourth field-effect transistors, said third field-effect transistor having a first current electrode coupled to said supply voltage terminal and both a second current electrode and a gate electrode connected together and coupled to said fourth input, and said fourth field-effect transistor having a first current electrode coupled to the second current electrode of said third field-effect transistor, a second current electrode connected directly to ground, and a gate electrode coupled to said second output.

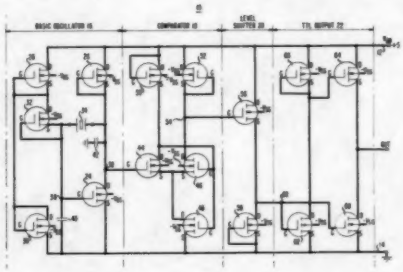


4,383,224

NMOS CRYSTAL OSCILLATOR

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1981, Ser. No. 226,781
Int. Cl.³ H03B *5/36;* H03K *12/00*
U.S. Cl. 331—74 **4 Claims**



1. An electronic oscillator of the type having a ground potential supply means, a positive potential supply means to which there are connected a basic oscillator stage coupled to a logic output stage, characterized by:

a voltage comparator, followed by a voltage level shifter, coupled between said basic oscillator and said output stage, said basic oscillator stage comprising an inverter and a resonator connected in a feedback loop to said inverter and comprising also a biasing network, said biasing network including:

a first, enhancement transistor with its source connected to said ground supply means and its gate connected to its drain;

a second, depletion transistor with its drain connected to said positive supply means and its gate and source connected to the gate and drain of said first transistor of said biasing network; and

a third, depletion transistor with its drain connected to the node of juncture of said first and second transistors, and its

gate and source connected to an input node of said inverter and to one side of said resonator.

4,383,225

CABLES WITH HIGH IMMUNITY TO ELECTRO-MAGNETIC PULSES (EMP)

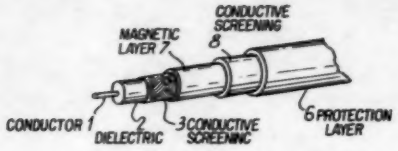
Ferdy Mayer, 18, rue Thiers, 38000-Grenoble, France

Filed Jul. 7, 1980, Ser. No. 166,403

Claims priority, application France, Jul. 6, 1979, 79 18065

Int. Cl.³ H01P *3/00*

U.S. Cl. 333—12 **12 Claims**



1. A flexible electric cable for transmission of predetermined signals and having high immunity to parasitic fields, comprising:

at least one signal conductor; and

shielding means, not contributing to the transfer of said predetermined signals through said cable, for decreasing the transfer impedance of said cable, comprising,

a first flexible conductive screening concentrically surrounding said at least one conductor,

at least one magnetic medium formed of a flexible lossy essentially insulating magnetic composite material concentrically surrounding said first flexible conductive screening, and

at least a second flexible conductive screening concentrically surrounding said magnetic medium.

4,383,226

ORTHOGONAL LAUNCHER FOR DIELECTRICALLY SUPPORTED AIR STRIPLINE

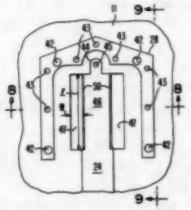
Evert C. Nygren; Ching C. Han; Edgar W. Matthews, Jr., all of Los Altos; Jack E. Kelly, Westlake Village, all of Calif., and Paul D. Frank, Boulder, Colo., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 25,229, Mar. 29, 1979, Pat. No. 4,262,265. This application Nov. 3, 1980, Ser. No. 203,204

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ H01P *5/08*

U.S. Cl. 333—33 **3 Claims**



1. Apparatus for providing a substantially orthogonal connection between a pair of identical strip conductors sandwiched around a dielectric layer suspended between two ground planes and a coaxial transmission section having an inner conductor and an outer conductor, comprising:

a continuous electrical connection between all points of the edges of the two strip conductors near the region of their connection into the coaxial section for a length along such conductors of at least 1.5 b, where b is the distance between the ground planes, wherein said two strip conductors are not electrically connected at any other region thereof;

a second electrical connection between the strip conductors and the coaxial section inner conductor; and

a third electrical connection between the ground planes and the coaxial section outer conductor.

4,383,227

SUSPENDED MICROSTRIP CIRCUIT FOR THE PROPAGATION OF AN ODD-WAVE MODE

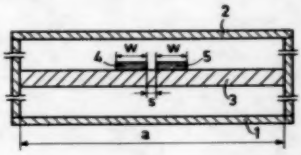
Frans C. de Ronde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

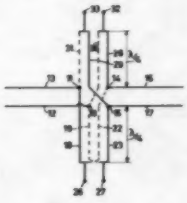
Continuation of Ser. No. 86,846, Oct. 22, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,595

Claims priority, application Netherlands, Nov. 3, 1978, 7810942

Int. Cl.³ H01P *3/08, 5/10, 5/20*

U.S. Cl. 333—121 **9 Claims**





1. A suspended microstrip circuit having two parallel electrically conducting planes, a dielectric substrate arranged in parallel therebetween and a first strip conductor provided on a first surface of the substrate, characterized in that:

a second strip conductor is provided on the first surface of the substrate in parallel with and at a short distance from said first strip conductor and being coupled to said first strip conductor;

a balanced supply source is connected between said two strip conductors for generating a wave phenomenon in the odd mode exclusively;

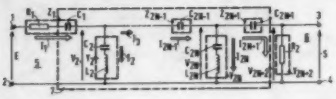
a symmetrical load is connected between said two strip conductors for terminating said suspended microstrip circuit.

4,383,228

FILTER DEVICE COMPRISING SWITCHED-CAPACITANCE INTEGRATING NETWORKS

Jean Gaillard, Verrieres-le-Buisson, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Dec. 9, 1980, Ser. No. 214,603
Claims priority, application France, Dec. 12, 1979, 79 30495
Int. Cl.³ H03H *11/12, 19/00*
U.S. Cl. 333—173 **5 Claims**



1. A filter device including a first group of switched-capacitance integrating networks for simulating an analog high-pass ladder filter comprising a first and a second input terminal, a first and a second output terminal, a plurality of series-connected capacitors . . . , C_{2k-1}, C_{2k+1}, C_{2k+3}, . . . interconnecting the first input terminal to the first output terminal, a plurality of admittances . . . Y_{2k}, Y_{2k+2}, . . . each having one end electrically connected to electrically-connected electrodes of a respective pair of said capacitors and having the other end electrically-connected to the second input and output terminals, said admittances comprising series-connected capacitors, inductors C_{2k}, L_{2k}; C_{2k+2}, L_{2k+2}; respectively

said first group comprising a plurality of pairs of switched-capacitance integrating networks RB_{2k-2}, RA_{2k-2}; RA_{2k}, RB_{2k}; RB_{2k+2}, RA_{2k+2}; each network having three inputs and one output; the first input of the network RA_{2k} being connected to the output of the network RB_{2k-2}, the second input to the output of the network RB_{2k+2}, and the third input to the output of the network RB_{2k}; the first input of the network RB_{2k} being connected to the output of the network RB_{2k-2}, the second input to the output of the network RA_{2k} and the third input to the output of the network RB_{2k+2}; the network RA_{2k} having the following transfer functions:

$$\frac{(-1)^{k-1}\lambda_k R}{s L_{2k}}$$

between the first input and the output;

$$\frac{(-1)^{k+1}\mu_k R}{s L_{2k}}$$

between the second input and the output; and

$$\frac{(-1)^{k+1} R}{s L_{2k}}$$

between the third input and the output; the network RB_{2k} having the following transfer functions:

$$-\frac{C_{2k-1}}{C_{2k-1} + C_{2k+1}}$$

between the first input and the output;

$$\frac{(-1)^{k}(C_{2k-1} + C_{2k} + C_{2k+1})}{s(C_{2k-1} + C_{2k+1})\,C_{2k}\,R}$$

between the second input and the output; and

$$-\frac{C_{2k+1}}{C_{2k-1} + C_{2k+1}}$$

between the third input and the output;

where:

$$\lambda_k = \frac{C_{2k-1}}{C_{2k-1} + C_{2k} + C_{2k+1}}, \mu_k = \frac{C_{2k+1}}{C_{2k-1} + C_{2k} + C_{2k+1}},$$

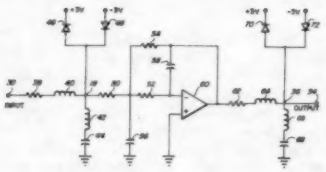
s is the LAPLACE operator, and R is an arbitrary constant having the units of resistance.

4,383,229

RESONANT FILTER CLIPPER CIRCUIT

Ronald R. Jones, Phoenix, Ariz., assignor to Circuit Research Labs, Tempe, Ariz.

Filed Jul. 20, 1981, Ser. No. 284,938
Int. Cl.³ H03K *5/08;* **H03H** *7/01*
U.S. Cl. 333—176 **12 Claims**



1. A circuit for peak limiting an input signal having an input and an output, comprising:

a first clipping circuit for clipping said input signal at a predetermined voltage;

first filter means coupled to said input and to said clipping circuit for eliminating clipping harmonics within a first range of frequencies, said first filter means including a first series resonant circuit which is resonant at a frequency approximately intermediate said first range;

second filter means having an input coupled to the output of said first filter means for attenuating frequencies above a predetermined frequency;

a second clipping circuit coupled to the output of said circuit; and

third filter means coupled to the output of said second filter means, to said second clipping circuit and to the output of said circuit for eliminating clipping harmonics within a second range of frequencies, said third filter means including a second series resonant circuit which is resonant at a frequency intermediate said second range.

4,383,230

VOLTAGE TUNED ACTIVE FILTER AND CIRCUITRY SIMULATING A CAPACITANCE AND AN INDUCTANCE

David B. Manzolini, 7709 Kilbourne Rd., Rome, N.Y. 13340

Filed Sep. 24, 1979, Ser. No. 78,076
Int. Cl.³ H03H *11/12, 11/48*
U.S. Cl. 333—214 **10 Claims**

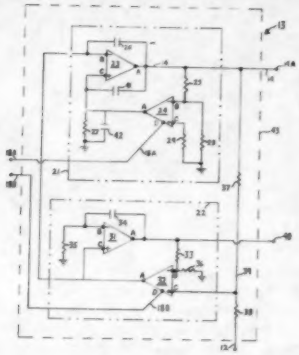
1. A voltage-tunable active filter comprising a resonating closed loop circuit including

a simulated capacitance comprising a first operational amplifier connected in a first closed loop with a first operational transconductance amplifier and means for applying a control current to the said first operational transconductance amplifier for establishing the simulated capacitance of the said first closed loop;

a simulated inductance comprising a second operational amplifier connected in a second closed loop with a second operational transconductance amplifier and means for

applying a control current to the said second operational transconductance amplifier for the purpose of establishing the simulated inductance of the said second closed loop;

conductor means joining the output terminal of the said second operational transconductance amplifier to the inverting input terminal of the said first operational amplifier; the inverting input terminals of both operational transconductance amplifiers being connected through a



resistor to ground; the said first closed loop, said second closed loop, said conductor means and ground constituting the said resonating closed loop;

means for introducing a multi-frequency input signal into the said resonating closed loop; means for withdrawing from the said resonating closed loop an output signal having amplified signal components within a constant percentage band width about the resonating frequency of the said resonating closed loop.

4,383,231

TEMPERATURE SWITCH HAVING A MAGNETICALLY SOFT AMORPHOUS METAL MEMBER

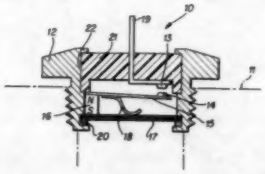
Minoru Yamanaka, Toyota; Mitsuyuki Suzuki, Gamagoori; Hideo Haneda, Toyota; Masatoshi Kato, Kariya, and Masataka Ohtsuki, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 28, 1981, Ser. No. 297,193

Claims priority, application Japan, Aug. 29, 1980, 55-120101

Int. Cl.³ H01H *61/00*

U.S. Cl. 335—146 **8 Claims**



1. A temperature switch comprising:

a housing;

a fixed contact positioned in said housing;

a movable contact member mounted in said housing carrying a movable contact and urged to first and second positions where said movable contact is in abutment with or displaced from said fixed contact, respectively;

a permanent magnet mounted in said housing;

a thermally sensitive member mounted in said housing so as to be exposed to a region the temperature of which is to be determined wherein said thermally sensitive member comprises a magnetically soft, amorphous metal member and is magnetically coupled to said permanent magnet; and

an operating member which comprises magnetic material wherein a first end thereof engages said movable contact member and a second end thereof opposite said first end is attracted to said thermally sensitive member against the resilience of said movable contact member, thereby causing displacement of the movable contact to the second position and wherein said thermally sensitive member comprises a paramagnetic body upon the temperature of said region exceeding the Curie point thereof so as to displace said movable contact to said first position.

4,383,232

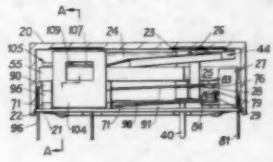
LOW PROFILE RELAY

Walter J. Richert, Princeton, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,328

Int. Cl.³ H01H *50/04*

U.S. Cl. 335—202 **8 Claims**



1. A relay of the type having an E-shaped yoke with a center arm and two side arms each spaced at a side of the center arm, a pusher member movable with an armature, and having a first and a second movable contact each disposed on a side of a stationary contact and each being movable with the pusher member for being brought into and out of contact with the stationary contact, wherein the improvement comprises:

a discrete bobbin having a yoke exciting coil wound thereabout, and having a hole into which said center leg of the yoke is inserted, and having an end wall having a slot;

a pusher member having a hole therein; and

a discrete stationary contact block having said stationary contacts mounted thereto, and having a projection portion which extends through the hole in said pusher member and being received in the end wall slot in the bobbin.

4,383,233

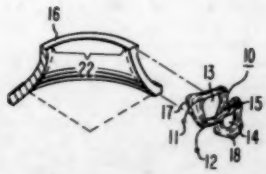
TELEVISION DEFLECTION YOKE

William H. Barkow, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1981, Ser. No. 287,093

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—213 **2 Claims**



1. A deflection yoke for use in a television receiver comprising:

a magnetically permeable core, incorporating two core halves;

a deflection coil adapted to be toroidally disposed on each of said core halves comprising:

a plurality of wire turns, each of said turns forming first and second loops and a wire crossover region between said loops, said wire turns disposed to bring said first and second loops into substantially parallel orientation such that said coil is toroidally disposed on one of said core halves with said first and second loops encircling said core.

4,383,234

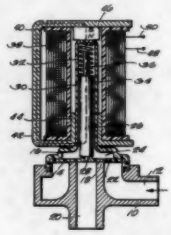
MAGNETIC LATCH VALVE

Kenji Yatsushiro, and Mikhail Godkin, both of Chicago, Ill., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 14, 1981, Ser. No. 311,200

Int. Cl.³ H01F 7/08

U.S. Cl. 335—253 **1 Claim**



1. A latching electromagnetic actuator comprising,

a magnetic frame,

a coil mounted within the frame,

a permanent magnet mounted within the inside diameter of the coil in engagement with the frame and directly in the path of the coil flux,

a magnetic plunger reciprocably mounted within the coil diameter and having a reduced diameter end facing the magnet,

a nonmagnetic guide mounted inside said coil and having a closed end adjacent said magnet serving as an air gap spacing the reduced diameter end of the plunger from the magnet when the coil is energized to draw the plunger into the coil towards the magnet,

a spring compressed between the closed end of the guide and the plunger to bias the plunger away from the permanent magnet,

energization of the coil with DC voltage exerting sufficient magnetic attraction on said plunger to draw the plunger into the coil with the reduced diameter end close to but spaced from the permanent magnet by said guide to enable the permanent magnet to retain the plunger in the actuated position in opposition to said spring in absence of coil energization,

application of DC voltage of opposite polarity to the coil being operative to develop sufficient coil flux opposing the magnetic flux of the magnet to permit the spring to move the plunger to its inactive position.

4,383,235

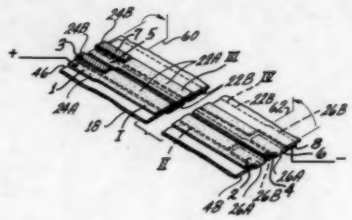
BI LEVEL ETCHED MAGNETIC COIL

Wilbur T. Layton, 15210 Sequoia Ct., San Diego, Calif. 92129, and Clyde L. Zachry, 13422 Tobiasson Rd., Poway, Calif. 92064

Filed Jul. 30, 1979, Ser. No. 61,819

Int. Cl.³ H01F 27/28

U.S. Cl. 336—200 **6 Claims**



1. An inductance coil comprising:

a plurality of relatively flat, thin, spaced-apart conductors rectangular in cross-section disposed in parallel relationship on both sides of a flexible dielectric substrate,

said conductors on one side of said substrate overlying the space between the conductors on the other side of the said substrate,

the ends of said conductors being narrower than the center of said conductors to form tabs, said tabs being interdigitized at each end of said flexible substrate, said flexible substrate being bent to connect said interdigitized tabs and form one continuous coil.

4,383,236

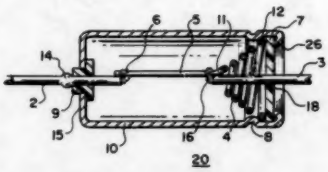
HEAT LIMITERS AND METHOD OF MANUFACTURE

Angelo Urani, and Aldino J. Gaia, both of St. Louis, Mo., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 28, 1981, Ser. No. 334,534

Int. Cl.³ H01H 37/76

U.S. Cl. 337—403 **12 Claims**



1. A circuit interrupting device for opening an electric circuit at a predetermined temperature, including a combination:

first and second spaced apart terminals, each having a free end portion, said free end portions being predeterminedly spaced from each other,

first and second masses of fusing conductive material,

a coil spring having first and second portions, said first portion positioned in a fixed relationship with respect to said first and second spaced apart terminals, and said second portion secured to said second terminal near said free end portion of said second terminal by said second mass of fusing conductive material, thereby to maintain said spring in tension, and

a conductive member extending from said second portion of said coil spring toward said free end portion of said first terminal, said first mass of fusing conductive material connecting said free end portion of said first terminal and

said conductive member, thereby to complete a circuit between said first and second terminals,

said masses of fusing conductive material being softenable at a predetermined temperature, sufficient to break said connections, thereby to permit said coil spring to relax, moving said conductive member away from said end portion of said first terminal to open the circuit between said first and second terminals.

4,383,237

VOLTAGE-DEPENDENT RESISTOR

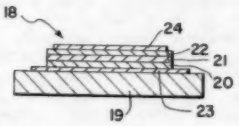
Kazuo Eda, Hirakata; Yasuharu Kikuchi, Moriguchi, and Michio Matsuoka, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 5, 1981, Ser. No. 260,720

Claims priority, application Japan, May 7, 1980, 55-60881; May 7, 1980, 55-60882; May 7, 1980, 55-60888

Int. Cl.³ H01C 7/12

U.S. Cl. 338—21 **7 Claims**



1. A voltage-dependent resistor of layered structure type, comprising a zinc oxide layer adjacent to a metal oxide layer consisting of at least one member selected from the group consisting of cobalt oxide (Co_2O_3), manganese oxide (MnO_2), barium oxide (BaO), strontium oxide (SrO), lead oxide (PbO) and rare earth oxides with electrodes applied to opposite surfaces of said zinc oxide layer and said metal oxide layer.

4,383,238

OBSTACLE DETECTOR FOR A VEHICLE

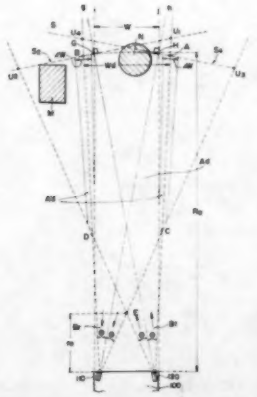
Hiroshi Endo, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 11, 1980, Ser. No. 186,329

Claims priority, application Japan, Sep. 13, 1979, 54-117593

Int. Cl.³ G01S 9/66

U.S. Cl. 340—32 **12 Claims**



1. An obstacle detector for a vehicle comprising:

means for producing a first pulse signal having pulse with a width substantially equal to twice the travel time required for light to travel a braking distance;

means responsive to the first pulse signal for transmitting a light signal of duration substantially equal to the pulse width of the first pulse signal so as to cover a detection area which extends to include the braking distance away from the vehicle;

means for receiving a light signal reflected by an obstacle present in the detection area and for converting the received light signal to a second corresponding electric pulse signal;

means for determining whether the time width of a pulse of the first signal is larger than the time interval taken from the time when the light signal is transmitted to the time when the light signal is received by said receiving means after reflection by the obstacle; and

said first pulse signal producing means including means for generating a clock signal, means for generating a ramp function starting each time a pulse of the clock signal is inputted thereto, means for creating the sum of a braking distance signal and a signal indicative of the distance which the vehicle travels during the driver's response time, depending on the vehicle speed, and means for defining the width of a pulse of the first signal as the time interval from the time when each ramp function starts to the time when the value of the ramp function exceeds the sum.

4,383,239

DETECTOR FOR DETECTING THE PASSAGE OF HEAVY OBJECTS ON A ROADWAY

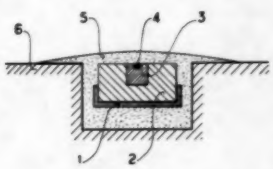
Richard C. Robert, Ollainville, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Jul. 28, 1981, Ser. No. 287,656

Claims priority, application France, Jul. 28, 1980, 80 16562

Int. Cl.³ G01L 1/16; G08G 1/07

U.S. Cl. 340—38 R **3 Claims**



1. A detector mountable in a roadway groove for detecting the passage of heavy objects traversing said roadway, said detector comprising an elongate strip in the form of nested channel-section members, said members comprising, from the outside member towards the inside:

a first channel section bar made of a strong material;

a second channel section bar made of a shock-absorbing material embedded in the channel of said first bar;

a third channel section bar made of a strong material embedded in the channel of said second bar; and

a sensor embedded in the channel of said third bar.

4,383,240

RECORDER OF THE STATUS OF A TRAFFIC CONTROL SYSTEM

Charles W. Staats, Jr., Mesa, Ariz., assignor to Solid State Devices, Tempe, Ariz.

Filed Feb. 24, 1981, Ser. No. 237,590

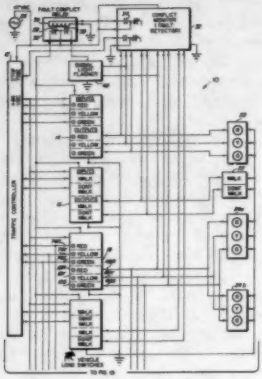
Int. Cl.³ B60Q 9/00

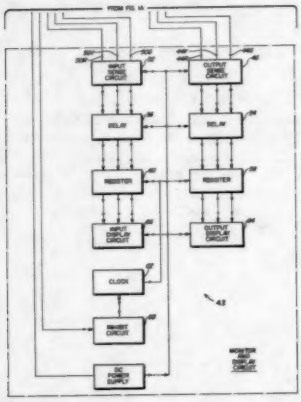
U.S. Cl. 340—46 **30 Claims**

1. A recorder of the operating state of a traffic control system wherein a plurality of traffic signal lights are selectively

energized in response to command signals comprising, in combination:

first means for monitoring the state of the signal lights and of said command signals, for storing said states, and for





displaying the state of the signal lights and command signals so stored; and

second means for maintaining said display unchanged upon the occurrence of predetermined states of the system.

4,383,241

VOICE WARNING SYSTEM FOR VEHICLES

Akira Kojima, Toki, and Atutoshi Okamoto, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 23, 1981, Ser. No. 314,414

Claims priority, application Japan, Oct. 24, 1980, 55-149812

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—52 F **4 Claims**

1. A voice warning system for vehicles comprising:

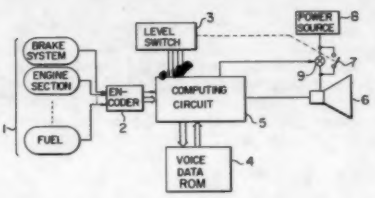
a plurality of sensors each of which detects a specified condition of one of a plurality of items of a vehicle which are to be detected and generates a detection signal;

encoder means responsive to said detection signal to generate a code signal indicative of corresponding one of said items and an interruption operation command signal;

voice generating means including means storing warning voice data corresponding to each of said items to be detected to generate a warning voice;

externally-operated command means for establishing a plurality of ranks of different priorities to classify said items correspondingly and selecting one of said ranks to inhibit said voice generating means from generating warning voices corresponding to particular one or more of said ranks; and

computing means responsive to said encoder means and said externally-operated means to control said voice generating means to inhibit the generation of warning voices corresponding to one or more of said ranks lower in priority than said selected rank, said computing means including first memory means responsive to said interruption operation command signal and said code signal to store



said code signal, means for determining one of said ranks corresponding to said code signal, second memory means for storing said determined rank, comparing means for comparing said stored rank with said rank selected by said externally-operated command means to cause said voice generating means to generate a warning voice when said stored rank is not lower in priority than said selected rank, and counter means whereby after the generation of said warning voice a code signal corresponding to another higher-priority one of said ranks is read from said first memory means to cause the generation of another warning voice.

4,383,242

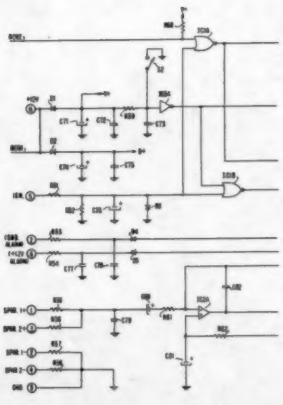
AUTOMOBILE ANTI-THEFT SYSTEM

Nathan Sassover, Beverly Hills, and William A. Rennie, Redondo Beach, both of Calif., assignors to TMX Systems Limited, Lisburn, Ireland

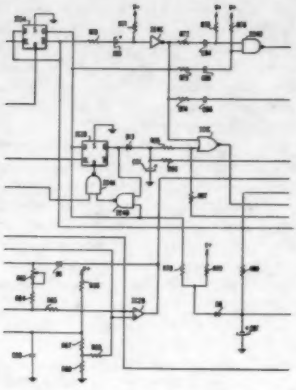
Filed Jun. 4, 1979, Ser. No. 45,119

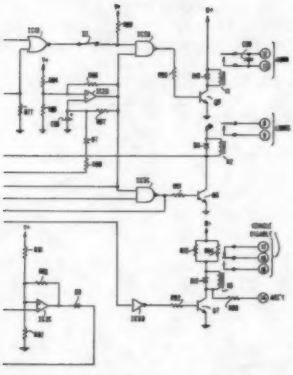
Int. Cl.³ B60R *25/04;* **G08B** *13/08*

U.S. Cl. 340—64 **75 Claims**



1. A vehicle security system for a vehicle having an electrical system and an ignition system which includes an ignition switch comprising a receiver/logic unit mounted in the vehicle and connected to the electrical system thereof; and an associated transmitter unit adapted to be carried by an authorized





operator and, when operated, to transmit a uniquely coded signal which is received and recognized by said receiver/logic unit; said receiver/logic unit including means for inhibiting the operation of the vehicle, means for enabling the operation of said inhibiting means responsive to a first receipt and recognition of said coded signal and for disabling the operation of said inhibiting means responsive to a second receipt and recognition of said coded signal, and means responsive to operation of said ignition switch for preventing the enabling of the operation of said inhibiting means while the ignition system of the vehicle is on.

4,383,243

POWERLINE CARRIER CONTROL INSTALLATION

Karl-Heinz Krügel; Hermann Tappeiner; Ernst-Robert Paessler, all of Erlangen, and Kurt Smutny, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,477

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825249

Int. Cl.³ H04B *3/54*

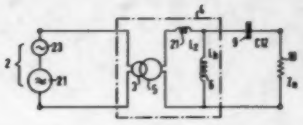
U.S. Cl. 340—310 R **7 Claims**

1. A powerline carrier control installation comprising:

(a) a powerline carrier control transmitter which supplies an audio frequency output voltage;

(b) an isolation transformer having a main field inductance and having a transformation ratio higher than 1:5 fed on the primary, low voltage side by the audio frequency output voltage;

(c) a coupling capacitor coupling the secondary side of said transformer to an a-c voltage network of given distribution system feeder a-c voltage and line frequency, the line frequency being somewhat lower than the audio frequency of the output voltage;



(d) said coupling capacitor along with the main field inductance of the isolating transformer forming a tuned resonant circuit the resonant frequency of which is at least approximately tuned to the audio frequency; and

(e) said powerline carrier control transmitter acting as a device for suppressing the line frequency backward voltage transmitted from the network side, the control transmitter being equipped to deliver, in addition to the audio frequency output voltage, a line frequency compensating a-c voltage which is low in amplitude in comparison to the line a-c voltage.

4,383,244

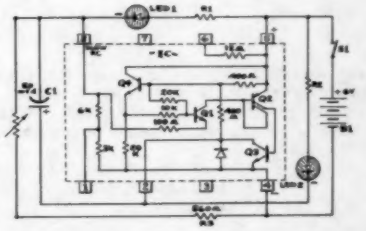
PSEUDO MULTI LIGHT DISPLAY DEVICE AND GENERATOR THEREFOR

Robert J. Knauff, 819 N. Gardner St., West Hollywood, Calif. 90046

Filed Oct. 31, 1979, Ser. No. 89,764

Int. Cl.³ G08B *5/38*; F21V *33/00*

U.S. Cl. 340—321 **16 Claims**



1. A dynamic display device for intensified illumination with a light emitting diode when in motion, and including in combination;

a battery power supply comprised of at least one cell producing a voltage,

a flasher circuit means for intermittent oscillator capacitance discharge of and producing a spaced pulse/waveform at maximum light emitting diode operating voltage and extended duration,

a light emitting diode connected between the positive potential of the power supply voltage and a power transistor of said flasher circuit means,

a timing capacitor connected between the negative side of the light emitting diode and said power transistor of said flasher circuit means,

and a bias connected between the negative side of said light

emitting diode and the negative potential of the power supply voltage,

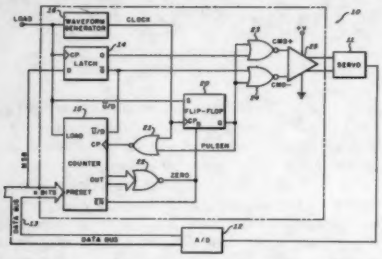
whereby the spaced pulse operation of the flasher circuit means intensely illuminates the light emitting diode in motion at a determined frequency to be sensed by eyesight retention as dots and bars of light.

4,383,245

DIGITAL SERVOMOTOR DRIVE APPARATUS

David J. Cooley, Phoenix, and Theodore C. Ebbinga, Scottsdale, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,802
Int. Cl.³ G05B *11/28*; H03K *13/02*
U.S. Cl. 340—347 DA **6 Claims**



1. An apparatus for converting digital words having a sign bit and a plurality of magnitude bits into analog signals having pulse widths corresponding to the magnitude bits and polarity corresponding to the sign bit, comprising:

waveform generator means for providing a first signal having a predetermined pulse rate and a second signal having a predetermined clock rate;

digital counting means, responsive to said first signal, for providing a count corresponding to said magnitude bits and said polarity bit of said digital words;

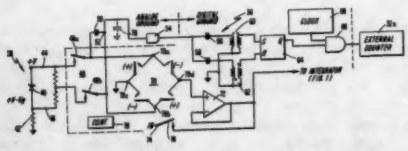
logic means responsive to said digital counting means and said second signal, for providing analog output signals having pulse widths proportional to said count and said clock rate of said second signal.

4,383,246

METHOD OF AND APPARATUS FOR SIGNALING THE END POINTS OF THE RAMP-DOWN INTERVAL IN A DUAL RAMP ANALOG TO DIGITAL CONVERTER

Irwin Munt, Springfield, N.J., assignor to Sangamo Weston, Atlanta, Ga.

Filed Jun. 10, 1981, Ser. No. 272,371
Int. Cl.³ H03K *13/70*
U.S. Cl. 340—347 NT **2 Claims**



1. In an integrated circuit type dual ramp analog to digital converter of a type comprising a reference voltage source, an input terminal for receiving an input voltage to be measured, an integrator means, first switch means for connecting said capacitor means to be charged by said reference voltage source, second switch means for coupling said input signal at said input terminal to said integrator means, third switch means for coupling said capacitor means to said integrator means, such that said capacitor voltage applied to said integrator means has a polarity opposite that of said input voltage, a pulse generator, an accumulator for counting pulses generated by said pulse generator and controlling pulses generated by said pulse generator and controlling means for controlling said switch means during a measurement cycle to successively (1) close said first switch means to cause said capacitor means to be charged by said reference source, (2) open said first switch means to cause voltage on said capacitor means to be stored and close said second switch means to apply said input voltage to said integrator means to generate a ramp-up voltage and (3) open said second switch means and control said third switch means to apply said voltage stored on said capacitor means with a polarity opposite that of said input voltage to said integrator means to generate a ramp-down voltage:

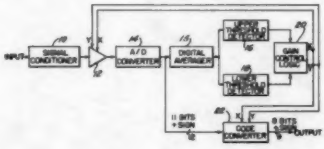
means for precisely controlling start and stop times of said accumulator to obtain a pulse count proportional to said input voltage, comprising comparator means for measuring a voltage of said capacitor means and, in response, generating a trigger signal each time the magnitude of said capacitor voltage crosses the magnitude of a comparator reference voltage, and means for applying said trigger signals to control said accumulator.

4,383,247

GAIN-STEP COMPANDING ANALOG TO DIGITAL CONVERTER

Gerald L. Assard, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,447
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **1 Claim**



1. A gain step companding analog-to-digital conversion system comprising:

amplifying means for providing an output signal of a selected amplification of an analog input signal, said amplifying means being a variable gain step amplifier and having feedback controls for choosing said selected amplification of one of only 48 dB gain, 30 dB gain, 12 dB gain and 0 dB gain;

an analog-to-digital converter having a quantized window, said converter is connected to receive the output of said amplifying means, said converter providing an 11 bit plus sign digital output signal;

digital averaging means connected to said analog-to-digital converter for providing an average digital output signal of the preceding digital output signals of said converter;

upper threshold detector means connected to receive said average digital output signal and for providing a first trigger signal if said received average digital output signal has a one bit in either of the two most significant bits;

lower threshold detector means connected to receive said average digital output signal and for providing a second trigger signal if said received digital signal has all zero bits in the eight most significant bits;

gain control logic means connected to receive said first trigger signal and said second trigger signal and for providing a predetermined output signal in response to one of said first trigger signal and said second trigger signal, said

predetermined output signal providing a feedback signal to said amplifying means; and

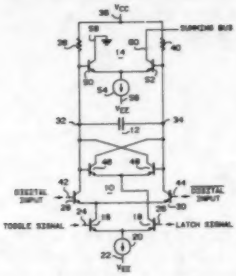
code conversion means connected to receive said analog-to-digital converter digital output signal and said gain control logic means predetermined output signal and for providing a code converted output signal of said analog-to-digital converter digital output signal, said provided code converted output signal in an eight bit plus sign digital signal representing a nineteen bit plus sign digital signal with a maximum possible error of 3.125%.

4,383,248

LATCHABLE FAST SETTLING DIGITAL TO ANALOG CONVERTER BIT SWITCH

Gregory J. Smith, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1981, Ser. No. 332,405
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **7 Claims**



1. A latchable bit switch for use in a digital-to-analog converter for enabling a bit current generated by a bit current source to a summing bus, comprising:

a data input differential pair of switching devices responsive to a digital input signal and an inverse digital input signal, said digital input signal having first and second states;

a cross coupled differential pair of switching devices responsive to the output of said data input differential pair of switching devices;

means for enabling a latch current generated by a latch current source to said data input differential pair of switching devices when receiving a toggle signal and to said cross coupled differential pair of switching devices when receiving a latch signal;

a digital-to-analog differential pair of switching devices responsive to the output of said data input differential pair of switching devices and said cross coupled differential pair of switching devices for enabling said bit current when said digital input signal is in said first state and said toggle signal is being received by said means, said bit current being latched as long as said latch signal is being received; and

a capacitor coupled across the output of said data input differential pair of switching devices and said cross coupled differential pair of switching devices for reducing glitches from said bit current.

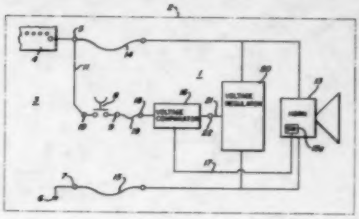
4,383,249

AUDIBLE WARNING DEVICE FOR MOTOR VEHICLES

Domenico Frigo, Venice, Italy, assignor to Fiamm Componenti Accessori S.p.A., Venice, Italy

Filed Dec. 11, 1980, Ser. No. 215,369
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—384 R **2 Claims**

1. An audible warning device comprising an electrically operated horn, an electric power source, a positive voltage conductor and a ground conductor, said horn being connected between said positive voltage and ground conductors through switch means which are operatable by an electric control signal, an electric control signal generating unit, a push-button switch having one terminal connected either to the positive voltage conductor or to the ground conductor and the other terminal connected to said electric control signal generating unit, a voltage regulator connected between said positive voltage conductor and ground conductor and provided with an output terminal biased at a positive voltage different from the voltage of said positive voltage conductor and connected to said electric control signal generating unit, said electric control signal defined by the difference between the voltage applied to the control signal generating unit by said push-button switch and the voltage applied by said output terminal of the voltage regulator.

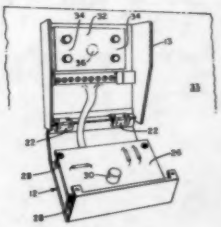


4,383,250

SYSTEM FOR INTRUSION DETECTION

Aaron A. Galvin, Lexington, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,948
Int. Cl.³ G08B *19/00, 13/00*
U.S. Cl. 340—521 **8 Claims**



1. Apparatus for sensing signals structurally-conducted through a wall, comprising:

a housing having an aperture in the back thereof;

a block of material having a portion extending through said back aperture;

means for mounting said housing to said wall such that the portion of said block extending through said housing is maintained in contact with said wall;

a cover hinged to said housing;

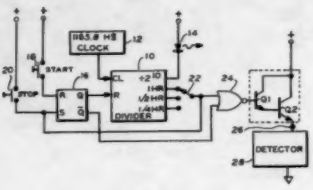
a printed circuit board resiliently mounted to said cover; and

a transducing element mounted to said printed circuit board, said board and transducing element being located such that when said cover is closed on said housing, said transducing element has a portion thereof is in mechanical spring-biased communication with said block.

4,383,251
TIMED SMOKE DETECTION

David E. Perelli; Stephen J. Perelli, both of 88 Green Ave., Madison, N.J. 07940, and John B. Jenkins, II, Villa Apt., Bldg. 4, Apt. 12, Frenchtown, N.J. 08825

Filed Oct. 1, 1981, Ser. No. 307,488
Int. Cl.[3] G08B 23/00, 17/10
U.S. Cl. 340—527 13 Claims



1. In a smoke detector having a sensing unit, said unit having a power terminal adapted to receive electrical energy, a timing device comprising:

switch means coupled to said power terminal for interrupting current thereat, said switch means being operable to dissipate less power when interrupting current at said power terminal;

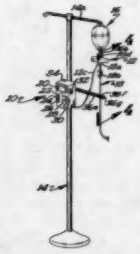
timing means for operating said switch means to cause interruption of current at said power terminal for a predetermined interval, said timing means and sensing unit having a common potential line, said switch means having a control terminal and a pair of switched terminals controlled thereby, the terminals of said switch means carrying potentials constrained within upper and lower limits, one of said limits being established by the potential on said common potential line; and

manually operable means for actuating said timing means and starting its predetermined interval.

4,383,252
INTRAVENOUS DRIP FEED MONITOR

Harold F. Purcell, 419 Old Country Rd., Orange, Conn. 06477; William E. Lattanzi, 834 Dentree Dr., Orange, Conn. 06511, and Robert W. Pike, 7998 Island Rd., Eden Prairie, Minn. 55344

Filed Nov. 24, 1980, Ser. No. 209,946
Int. Cl.[3] G08B 21/00; A61M 5/16
U.S. Cl. 340—606 8 Claims



1. Intravenous monitor apparatus for use with an intravenous pole stand supporting an intravenous solution container having a drip chamber and a drip tube extending downwardly therefrom, comprising:

a mounting bracket including means for releasably securing said bracket to said intravenous pole stand for vertical adjustment thereon, and having horizontally elongated guide means integral therewith;

a horizontal bar slidably supported within said elongated guide means and longitudinally adjustable therein, said bar including means thereon remote from said mounting bracket for restrainably engaging a segment of said drip tube at a desired horizontal distance from said pole stand below said drip chamber, and releasable retention means on said bracket holding said bar in said elongated guide means;

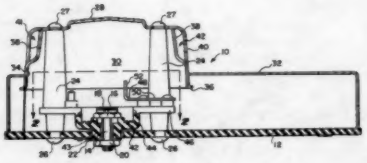
means positioned in proximity to said drip chamber for sensing each intravenous drip and generating a signal in response to each drip; and

an intravenous monitor in a housing affixed to said bracket and including circuit means within said housing electrically connected to said drip sensing means and operative to process said signals, and means within said monitor housing connected to said circuit means for visual display numerically of the drip rate as counted by said signal processing means, whereby said bracket vertically positions said intravenous monitor on said intravenous pole stand and said adjustable horizontal bar engaged through said bracket provides for substantial vertical orientation of said drip chamber, thereby providing for accuracy of said visually displayed drip rate.

4,383,253
IONIZATION SMOKE DETECTOR

Hau C. Lam, and Thomas K. P. Lee, both of Kowloon, Hong Kong, assignors to International Quartz Ltd., Kowloon, Hong Kong

Filed Jan. 29, 1979, Ser. No. 7,440
Int. Cl.[3] G08B 17/10
U.S. Cl. 340—629 9 Claims



1. An ionization smoke detector comprising a first electrode having a head at the end thereof and a central axis, a source of radiation mounted on said head at the end of said first electrode, a metallic cup shaped member having a central axis aligned with and coaxial with said central axis of said first electrode and positioned with the interior thereof facing and being spaced from said first electrode, said cup shaped member defining a second electrode and having passage means through the walls thereof for admitting ambient air into the space defined within said cup shaped member and between said cup shaped member and said first electrode, a third electrode spaced axially outwardly from said head of said first electrode and laterally to one side of, or radially of, said central axis of said head of said first electrode, said first, second and third electrodes being adapted for connection to a smoke detector circuit and said radioactive source providing a predetermined ion current flow between said first electrode and said second electrode to establish a predetermined voltage potential at said third electrode, and the voltage potential at said third electrode being changed by the presence of smoke in said space with such change in potential being sensed by the smoke detector circuit for causing an alarm to sound.

4,383,254

CONTROL APPARATUS FOR A DISPLAY MATRIX

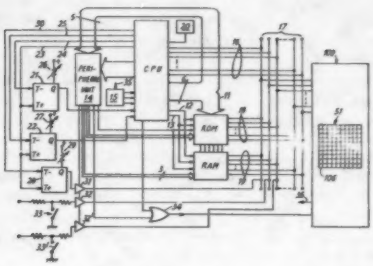
David Gemmell, 15 Downside, Belmont, Sutton, Surrey; Anthony Longley, 4 Everest Rd., Crowthorne, Berkshire, and Duncan Irvine, 108 Rowland Way, Prebendal Farm Estate, Aylesbury, Buckinghamshire, all of England

Filed Sep. 12, 1980, Ser. No. 186,803

Claims priority, application United Kingdom, Sep. 14, 1979, 7931939

Int. Cl.³ G09G 3/00

U.S. Cl. 340—712 6 Claims



1. In a control apparatus for a display matrix adapted for use as a means of communication by a disabled person and comprising display matrix means defining a plurality of electrically actuable display positions and responsive to electrical display input signals representative of display positions in said matrix means; temporary memory means for storing in a predetermined ordered group of sets of locations thereof a plurality of sets of display position data corresponding to selected display positions; matrix and memory addressing means coupled to said display matrix means and to said temporary memory means to supply respectively thereto electrical display input signals and display position data; and user actuable input switch means remote from the matrix means and coupled to said matrix and memory addressing means to supply distinguishable control signals thereto having predetermined respective significances, said matrix and memory addressing means responding differently to said distinguishable control signals, in dependence upon the respective significances thereof, to selectively actuate any user chosen one of said display positions, to cause a plurality of sets of display position data corresponding to successive selected display positions to be stored in the said group of sets of locations, and to read said stored sets of display data from said temporary memory means in said predetermined order and actuate said corresponding plurality of display positions of said display matrix means, the inprovement comprising: said matrix and memory addressing means comprising central processor means; control memory means coupled to said central processor means to be addressed thereby and to supply data thereto in accordance with a program contained in said control memory means for said central processor means; and timing and decoding means coupled to said control memory and temporary memory means and adapted to selectively enable the respective memory means in accordance with commands supplied by said central processor means to said timing and decoding means; said user actuable input switch means being arranged to allow a user to generate different distinguishable control signals; said central processor means being adapted to operate in accordance with said program in said control memory means to respond to a predetermined pattern of user actuation of said switch means to selectively actuate any user chosen one of said display positions; said display positions including a write region and a read region; and said control memory means with said program being such that, in response to the selected actuation of said write region said central processor means, in accordance with said program, causes a plurality of sets of display position data corresponding to subsequently actuated selected display positions chosen by the user to be stored in said predetermined ordered group of sets of locations in said temporary memory means, and in response to the selected actuation of said read region said central processor means, in accordance with said program, automatically reads the stored sets of display position data from said temporary memory means in said predetermined order and actuates said corresponding plurality of display positions of said display matrix means in the corresponding order.

4,383,255

MINIATURE DISPLAY DEVICE

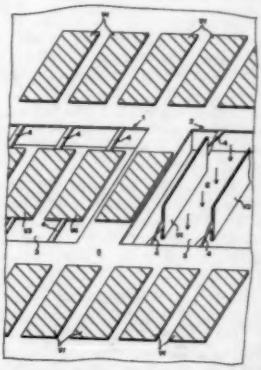
Pierre-André Grandjean, Neuchatel; Martyn-Andrew Cadman, Hauterive; Raymond Vuilleumier, Fontainemelon, and Raymond Guye, Colombier, all of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Mar. 10, 1981, Ser. No. 242,298

Claims priority, application Switzerland, Mar. 11, 1980, 1890/80

Int. Cl.³ G08B 5/36

U.S. Cl. 340—764 26 Claims



1. A miniature display device comprising a plurality of shutter members having rest positions in which they obturate one or more cavities in a carrier and each being suspended from the carrier by two resilient attachments at opposite edges respectively of the shutter member, the attachments allowing the shutter member to turn about a torsion axis but acting torsionally to bias the shutter member back to its rest position, and means for subjecting each shutter member to an electric field to cause the member to turn through a substantial angle about its torsion axis, thereby to decrease its obturating action.

4,383,256

DISPLAY DEVICE

Koichiro Kurahashi, Amagasaki, and Noriyuki Tomimatsu, Nagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1980, Ser. No. 154,176

Claims priority, application Japan, May 29, 1979, 54-68644

Int. Cl.³ 340 767; G09G 3/22

U.S. Cl. 340—793 3 Claims

1. A display device comprising:

a display panel constituted by display elements arranged in a matrix form, each display element having a memory function;

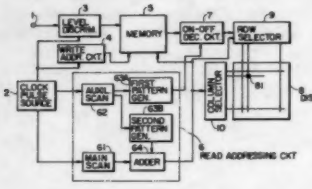
level discriminating means for converting an image signal into a first level signal a and a second level signal b defined by the equation $v/M=a/(m\times n)+b/m$ where v is the amplitude level of said image signal and wherein the

maximum amplitude level of said image signal is divided into $M=m\times n$ levels;

memory means for storing said first and second level signals;

addressing circuit means for selecting addresses of said first and second level signals to be read out of said memory means periodically at predetermined time intervals during a display period with said predetermined time intervals varying and being respectively proportional to either the coefficients $1/(m\times n)$ or $1/m$ of said equation and for selecting display elements which are potentially to be turned on and off in correspondence to said addresses;

reference level indicating means for indicating first and second reference signals at said predetermined time intervals; and



decision circuit means for comparing said first and second level signals and said first and second reference signals read and indicated, respectively, each said predetermined time interval to determine whether the corresponding display element should be turned on or off, said corresponding display elements being turned on according to a decision result produced in response to one of said first level signal and said second level signal and being turned off according to a decision result produced in response to the other of said level signals in order to display an image having half tones, said corresponding display elements being turned on and off no more than once during said display period.

4,383,257

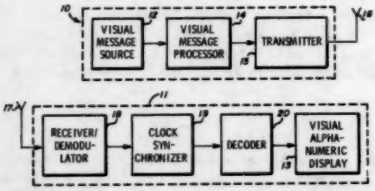
MESSAGE COMMUNICATION SYSTEM WITH MESSAGE STORAGE

Frank V. Giallanza, San Jose; Don M. Tracey, Mountain View, and Wayne T. Holcombe, Palo Alto, all of Calif., assignors to Millicom Incorporated, Melville, N.Y.

Continuation-in-part of Ser. No. 106,713, Dec. 26, 1979. This application Dec. 12, 1980, Ser. No. 215,921

Int. Cl.³ G08B 5/22

U.S. Cl. 340—825.47 **65 Claims**



1. A message communication system with message storage comprising:

transmitting means for developing and transmitting a binary encoded data train which has a message portion and a header preceding said message portion, said message portion including a plurality of characters, said header including, in the order stated, a plurality of synch signals, a first control signal following said synch signals to mark the end of said plurality of synch signals, a selected number of address signals immediately following said first control signal, said first control signal being further interposed between each of said selected number of address signals in the event said header includes more than one of said selected number of address signals, a second control signal to mark the end of said selected number of address signals, and a message length signal having information of a total character count of said plurality of characters; and

a plurality of personal receivers, each of said receivers including synch means responsive to said synch signals and operative to prepare each of said personal receivers for reception of said data train, address means responsive to said address signals for addressing one or more of said personal receivers for which message portion is intended defining an addressed personal receiver, said address means having first addressable means responsive to a particular one of said address signals for uniquely identifying a different one of said personal receivers and second addressable means responsive to other of said address signals for commonly identifying selected ones of said personal receivers and being programmable by said message portion, and message means for receiving and storing in said addressed personal receiver said message portion and selectively displaying said message portion in alphanumeric characters, said message means including a plurality of character storage locations, said message means in response to said message length signal further being for reserving a selected number of said character storage locations in said addressed personal receiver commensurate with said total character count.

4,383,258

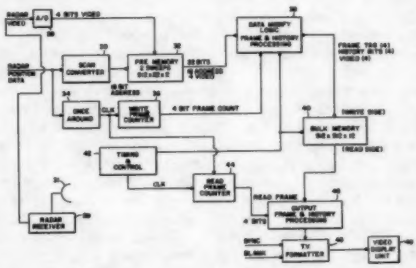
TIME ENCODED SPATIAL DISPLAY

Richard J. Morin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1980, Ser. No. 168,988

Int. Cl.³ G01S 7/04

U.S. Cl. 343—5 SC **8 Claims**



1. In a radar display system for a radar system including a scanning antenna and means connected to said antenna for generating a video return signal data value for each of n video data cells corresponding to the area scanned during each complete revolution of said antenna, said radar display system further including a scan converter for converting polar coordinate azimuth and range values from said radar system to rectangular coordinate format and for providing a corresponding unique storage address to each one of said data values, the improvement comprising:

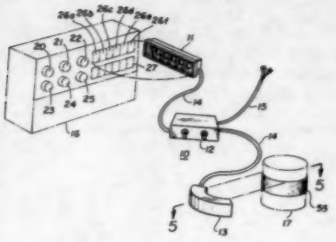
means connected to said scan converter for determining and storing the highest value of video return signal occurring in each of said n video data cells during a predetermined number of revolutions of said antenna, for determining and storing the number of said predetermined number of antenna revolutions in which the value of said video return signals for each of said n data cells exceeded a predetermined threshold level and for determining and storing the count of said predetermined number of antenna revolutions on which said threshold level was last exceeded for each of said n data cells.

4,383,259

MARINE NAVIGATIONAL AID

Carl J. Rader, Coconut Creek, Fla., assignor to World Navigation Electronics Inc., Coconut Creek, Fla.

Filed Nov. 24, 1980, Ser. No. 209,821
Int. Cl.³ G01S 1/24
U.S. Cl. 343—103 21 Claims



1. Apparatus for steering a vessel along a preselected course, said apparatus being adapted to interface with a LORAN C receiver and with an auto pilot, comprising

means comprising light sensitive apparatus for reading the vessel's position relative to said preselected course, said vessel position being determined and indicated by said receiver,

means for applying course control signals to said auto pilot,

means for converting said reading of the vessel's position into said course control signals, and

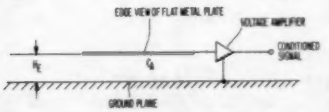
means for supplying a source of electric power to said reading means to said means for supplying control signals and to said converting means.

4,383,260

LOW PROFILE ELECTRIC FIELD SENSOR

Paul A. Ryan, Columbus, Ohio, assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Continuation-in-part of Ser. No. 41,853, May 24, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,621
Int. Cl.³ H01Q 1/26; G01W 1/00
U.S. Cl. 343—701 10 Claims



1. A low profile electric field sensor adapted for use in sensing atmospheric weather disturbances by sensing an RF electric field at 1 MHz or below in relation to a local ground plane in which an output signal is produced which is relatively independent of height from said local ground plane within a given range of heights, comprising:

an antenna comprised of metallic material, generally planar in form, having a major dimension generally parallel to said local ground plane,

quasi-charge amplifying means responsive to charge and producing an output signal, and

connecting means conductively connecting said antenna to said quasi-charge amplifying means,

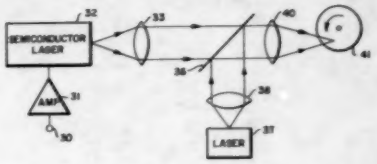
whereby sensor height can be freely selected within said given range without accepting a reduction in output signal.

4,383,261

METHOD FOR LASER RECORDING UTILIZING DYNAMIC PREHEATING

Mark W. Goldberg, Laurel, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Ft. George G. Meade, Md.

Filed Aug. 21, 1980, Ser. No. 180,075
Int. Cl.³ G01D 15/14
U.S. Cl. 346—1.1 4 Claims



1. A method of optical recording, comprising:

focusing an unmodulated beam onto a spot on a thermally sensitive recording medium to heat the medium at said spot to a temperature below the hole formation threshold of the medium;

cofocusing a modulated beam superimposed onto the unmodulated beam to form a spot the diameter of which is larger than the spot formed by said unmodulated beam, and

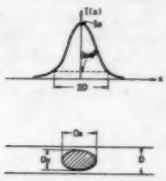
selectively varying the temperature of the medium a said smaller spot above and below the hole formation threshold of the medium.

4,383,262

LASER DATA RECORDING METHOD

Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1981, Ser. No. 243,212
Claims priority, application Japan, Mar. 28, 1980, 55/40828
Int. Cl.³ G01D 15/14; H04N 1/036; H01S 3/10
U.S. Cl. 346—1.1 3 Claims



1. A laser data recording method in which data is recorded on a data recording material by scanning and modulating a laser beam, comprising the steps of:

generating a scanning laser beam on said data recording material, said scanning laser beam having a substantially circular configuration and a diameter defined at an intensity value of $1/e^2$ of said laser beam of approximately twice a scanning line pitch on said data recording material; and

intensity modulating said scanning laser beam in such a manner that a ratio of a laser beam intensity in an "on" state to a laser beam intensity in an "off" state is in a range of from 1:0.24 to 1:0.53 producing a varying voltage bias such that $D<Dx<2D$, where Dx acts as the dot size in the scanning direction and D is a recording width obtained when scanning exposure is carried out continuously between adjacent dot positions of said recording material.

4,383,263

LIQUID EJECTING APPARATUS HAVING A SUCTION MECHANISM

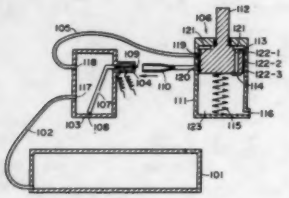
Masakazu Ozawa, Yokohama; Kunio Watanabe, Kawasaki; Kiyohide Kojima, Tokyo; Shinichi Seito, Tokyo, and Takashi Miyazaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1981, Ser. No. 263,030

Claims priority, application Japan, May 20, 1980, 55-66999; May 26, 1980, 55-69835; Jun. 23, 1980, 55-85022

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 30 Claims



1. A liquid-jet apparatus comprising a first tank containing liquid, a sub-tank in communication with said first tank for receiving liquid supplied from said first tank, a liquid-ejecting head connected to said sub-tank to eject the liquid supplied from said sub-tank, and a suction mechanism in direct communication with said sub-tank and adapted for communication by a second path with said liquid-ejecting head, said suction mechanism reducing the pressure of the sub-tank directly so that liquid from said first tank is supplied to said sub-tank, said suction mechanism reducing the pressure of said liquid-ejecting head by way of said second path when said suction mechanism communicates with the liquid-ejecting head, so that the liquid is sucked from said sub-tank into said liquid-ejecting head.

4,383,264

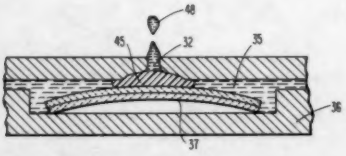
DEMAND DROP FORMING DEVICE WITH INTERACTING TRANSDUCER AND ORIFICE COMBINATION

Arthur M. Lewis, Redding, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 18, 1980, Ser. No. 160,613

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 30 Claims



1. An ink jet system adapted for ejecting a, droplet of ink upon demand, comprising:

a. deforming means for controlled deforming upon demand, said deforming means comprising a first actuatable portion adapted to be deformed on demand and a second portion coupled to said first portion;

b. an orifice housing containing an orifice chamber which terminates in an orifice;

c. a reservoir containing said ink;

d. said orifice housing being positioned to define generally one side of said reservoir, and said second portion of said deforming means being positioned on the opposite side of said reservoir from said orifice housing, and said second portion being further positioned closely to but outside said orifice chamber and oriented such that it pushes toward and substantially into said orifice chamber during said controlled deforming, thereby causing a droplet of ink to be ejected from said orifice.

4,383,265

ELECTROOSMOTIC INK RECORDING APPARATUS

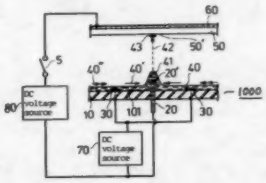
Tadao Kohashi, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 10, 1981, Ser. No. 291,502

Claims priority, application Japan, Aug. 18, 1980, 55-113887

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R 16 Claims



1. A picture recording apparatus comprising:

an ink printing head for energizing fluid ink responding to input picture signal, said ink printing head including at least a recording electrode having an end tip to be disposed to face a recording media face with a predetermined gap inbetween, an auxiliary electrode disposed isolated from and surrounding said recording electrode and, a substrate of dielectric substance disposed between said recording electrode and said auxiliary electrode, said substrate forming electroosmotic travelling path for a fluid ink between said recording electrode and said auxiliary electrode, when an electroosmosis voltage is impressed across said recording electrode and said auxiliary electrode, thereby to bring said fluid ink to an energized state that said fluid ink protrudes on said end tip,

a moving means for moving said recording media face relatively of said ink printing head thereby making ink printing on said recording media by transferring said fluid ink at said energized state.

4,383,266

AVALANCHE PHOTO DIODE

Kazuo Sakai, Tokyo; Yuichi Matsushima, Tokorozawa; Shigeyuki Akiba, Tokyo, and Takaya Yamamoto, Niza, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Sep. 16, 1980, Ser. No. 187,744

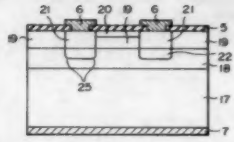
Claims priority, application Japan, Sep. 26, 1979, 54-123530; Oct. 8, 1979, 54-128893

Int. Cl.³ H01L *29/90*

U.S. Cl. 357—13 3 Claims

1. In an avalanche photo diode, which is provided with a guard ring around a photo detecting region having a pn junction, the improvement comprising: the photo detecting region, being composed of a first semiconductor layer, a second semiconductor layer formed in contact with the first semiconductor layer and forming therewith the pn junction of the photo detecting region said first semiconductor layer being of the same conductivity type as the semiconductor of the guard ring, and a third semiconductor layer formed in contact with the

second semiconductor layer and having a larger band gap than the second semiconductor layer, the tip end of the guard ring



being formed to extend down into the third semiconductor layer.

4,383,267

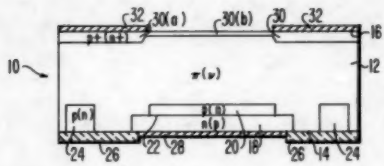
AVALANCHE PHOTODIODE AND METHOD OF MAKING SAME

Paul P. Webb, Quebec, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1980, Ser. No. 198,209

Int. Cl.³ H01L *27/14, 29/90*

U.S. Cl. 357—30 **5 Claims**



1. In an avalanche photodiode comprising:

a semiconductor substrate having opposed major surfaces;

a first layer in the substrate and adjoining a first major surface of the substrate;

a second layer in the substrate spaced a distance from the first major surface and contiguous with a portion of the first layer; and

a contacting layer in the substrate and adjoining a second major surface of the substrate through which light enters the photodiode;

wherein the substrate, the second layer and the contacting layer are of one conductivity type and the first layer is of the opposite conductivity type thereby forming a p-n junction between the first and second layers;

the improvement which comprises:

the contacting layer being of varying thickness with the portion of the contacting layer through which light enters the photodiode being thinner than the remaining portion.

4,383,268

HIGH-CURRENT, HIGH-VOLTAGE SEMICONDUCTOR DEVICES HAVING A METALLURGICAL GRADE SUBSTRATE

Ramon U. Martinelli, Hightstown; Norbert W. Brackelmanns, Ironia, and Paul H. Robinson, Lawrenceville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,347

Int. Cl.³ H01L *29/72, 27/14, 29/167*

U.S. Cl. 357—34 **4 Claims**

1. A power semiconductor transistor, comprising:

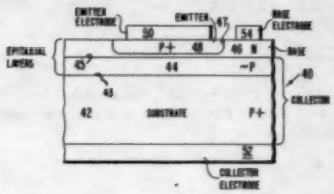
a substrate comprising upgraded metallurgical grade silicon of a first conductivity type;

a first silicon epitaxial layer disposed on said substrate and having said first conductivity type;

said first epitaxial layer and said substrate having an interface therebetween;

a second silicon epitaxial layer, of second conductivity type, disposed on said first layer;

a diffused region, of first conductivity type, extending into the second epitaxial layer from the surface thereof;



said transistor having a nominal current rating at which a current density of at least 10 amperes per cm^2 crosses said interface when the transistor is conducting a current equal to its nominal current rating.

4,383,269

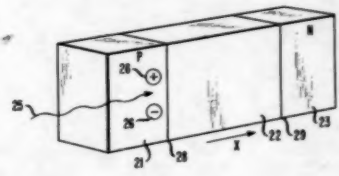
GRADED BANDGAP PHOTODETECTOR

Federico Capasso, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1980, Ser. No. 188,719

Int. Cl.³ H01L *27/14, 29/90, 29/161*

U.S. Cl. 357—30 **7 Claims**



6. In a semiconductor avalanche photodetector, a semiconductor body comprising:

a first region of a first conductivity type;

a second region of a conductivity type opposite to said first conductivity type; and

a graded bandgap region situated between said first and second regions;

one of said first and second regions being capable of absorbing radiation to be detected and generating charge carriers in response thereto.

4,383,270

STRUCTURE FOR MOUNTING A SEMICONDUCTOR CHIP TO A METAL CORE SUBSTRATE

Robert L. Schelhorn, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,367

Int. Cl.³ H01L *23/48, 23/02, 23/48*

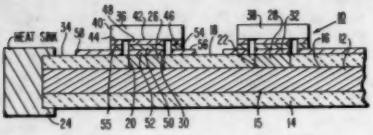
U.S. Cl. 357—71 **6 Claims**

1. A thermally and electrically conductive mounting for a semiconductor chip on a substrate comprising:

a thermally and electrically conductive substrate having a substantially plane surface;

a raised thermally and electrically conductive pedestal on said substrate having a surface spaced from and substantially parallel to said plane surface, said semiconductor chip being mounted on said pedestal, said pedestal being in electrical and thermal contact with said plane surface; and

an electrically insulating porcelain layer on said plane surface having an outer surface substantially coplanar with



said surface of said pedestal, said porcelain layer abutting said pedestal and forming with said pedestal a continuous plane surface.

4,383,271

THERMAL IMAGER

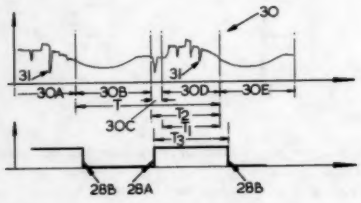
Charles A. Berry; Peter J. Berry, and Ian H. Howie, all of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed May 12, 1981, Ser. No. 263,098

Claims priority, application United Kingdom, May 22, 1980, 8017012

Int. Cl.³ H04N 7/18

U.S. Cl. 358—113 **2 Claims**



1. A thermal imager comprising an optical scanner for receiving thermal infrared radiation from a field of view, a radiation detector for receiving the scanned radiation from the scanner, means for applying a characteristic radiation feature to the detector in superimposition with the scanned radiation from the scanner, signal processing circuitry connected in parallel with a sync signal recognition circuit to receive the detector output signal, a video output device connected to the output of said signal processing circuitry and clock means for timing the operation of said signal processing circuitry and said video output device, said clock means being controlled by the output of said sync signal recognition circuit, and wherein the scanner is arranged to provide the detector output waveform with a period T each such period T containing a scene-derived waveform of duration T_1 such that $T_1 < 50\%T$ and otherwise being devoid of a waveform which could be recognised erroneously by said recognition circuit, the characteristic radiation feature applying means is arranged to locate the resultant sync signal in the detector output waveform prior to and closely adjacent the scene-derived waveform at a time interval T_2 prior to the end of the scene-derived waveform, and the clock means comprises a monostable which is set by the sync signal recognition circuit for a duration T_3 such that $T_2 < T_3 < 50\%T$.

4,383,272

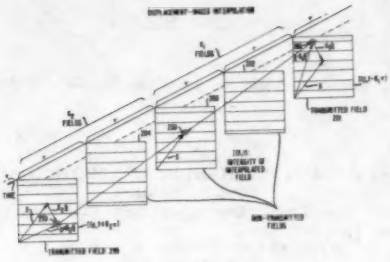
VIDEO SIGNAL INTERPOLATION USING MOTION ESTIMATION

Arun N. Netravali, Westfield, and John D. Robbins, Aberdeen, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1981, Ser. No. 253,698

Int. Cl.³ H04N 7/12

U.S. Cl. 358—136 **24 Claims**



1. Apparatus for estimating the intensities of elements (pels) in a picture in accordance with information defining intensities of pels in preceding and succeeding versions of the picture including means for determining by interpolation intensities of pels in said picture in accordance with intensities of pels in related locations in said preceding and succeeding versions, characterized in that

said determining means includes means for selecting said related locations as a function of the displacement of objects in said picture.

4,383,273

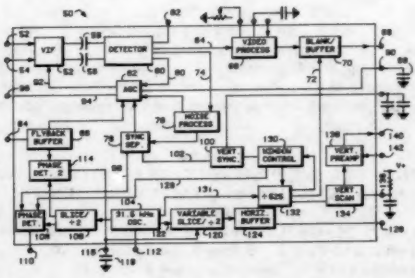
LARGE SCALE, SINGLE CHIP INTEGRATED CIRCUIT TELEVISION RECEIVER SUBSYSTEMS

Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,607

Int. Cl.³ H04N 5/44

U.S. Cl. 358—188 **10 Claims**

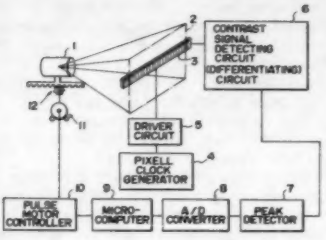


1. A television subsystem for performing all of the electronic video processing functions of a television receiver required between the RF tuner and the power output stages of the receiver but for the sound channel, including means for producing horizontal and vertical sync pulses wherein the subsystem is a single integrated circuit.

4,383,274
AUTOMATIC FOCUS CONTROLLING DEVICE

Masafumi Iwaya, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 18, 1981, Ser. No. 244,917
Claims priority, application Japan, Mar. 19, 1980, 55-35200
Int. Cl.³ H04N 3/26
U.S. Cl. 358—227 1 Claim

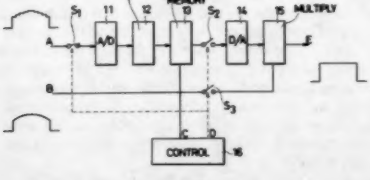


1. An automatic focus controlling device comprising a bilinear type solid state image pick-up device, a taking lens for forming an image of an object on an image pick-up face of the image pick-up device, a servomechanism for moving the taking lens along the optical axis thereof, a driver means which generates pixell clock pulses with a predetermined frequency and drives said image pick-up device in synchronization with the pixell clock pulses, a differentiating means for generating a contrast signal by differentiating a time series electric signal from said image pick-up device made by reading the image of the object, detecting means for detecting peak levels of said contrast signal, a comparator which compares the levels of two peaks of the contrast signal with each other at two different positions of said taking lens when moved along its optical axis by said servomechanism, and a control circuit for controlling the servomechanism according to a difference signal generated by the comparator based on the difference between the levels of the two peaks wherein the improvement which comprises a low-pass filter and a band-stop filter inserted between said bilinear type solid state image pick-up device and said differentiating means, both the filters serving to cut off signal components having a frequency higher than said predetermined frequency and signal components having a frequency near the half of the predetermined frequency, respectively, from the time series electric signal.

4,383,275
READ-OUT LEVEL COMPENSATION IN AN OPTICAL READER SYSTEM

Hiromu Sasaki, Yamatokoriyama; Nobuo Nakamura, Osaka, and Humikazu Nagano, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1980, Ser. No. 191,084
Claims priority, application Japan, Sep. 29, 1979, 54-127117
Int. Cl.³ H04N 1/40
U.S. Cl. 358—280 8 Claims



1. An optical reader system comprising:

a light source for illuminating an original sheet and a reference sheet;

a plurality of sensor elements for detecting the light reflected at the surface of said original sheet and developing first output signals in response thereto,

said sensor elements detecting the light reflected at the surface of said reference sheet and developing second output signals in response thereto;

means for developing a picture signal in accordance with the first output signals derived from said plurality of sensor elements; and

compensation means for performing a compensation operation on said picture signal thereby producing a compensated picture signal, said compensation means including;

memory means for storing a reciprocal of the second output signals from said sensor elements in digital form therein; and

analog-to-digital converter means connected to said sensor elements for receiving the second output signals from said sensor elements and developing digital second output signals in response thereto;

reverse converter means for receiving the digital second output signals from said analog-to-digital converter means and developing a reciprocal of said digital second output signals in a digital form in response thereto, the reciprocal of said digital second output signals being presented to said memory means for storage therein when said optical reader system operates in said write mode;

write means for introducing said reciprocal of said digital second output signals from said reverse converter means into said memory means when said optical reader system operates in said write mode;

read means for developing said reciprocal of said digital second output signals from said memory means,

digital-to-analog converter means for converting the reciprocal of said digital second output signals from said read means when said optical reader system operates in said read mode and for developing reciprocal analog second output signals in response thereto;

multiplier means for multiplying the reciprocal analog second output signals from said digital-to-analog converter means by said picture signal thereby producing said compensated picture signal;

switching means for connecting said write means to said memory means when said sensor elements scan said reference sheet, and for connecting said read means to said memory means when said sensor elements scan said original sheet,

controller means connected to said memory means and including said write means and said read means for controlling said optical reader system to operate in said write mode and in said read mode to introduce said reciprocal into said memory means and to develop said reciprocal from said memory means, respectively;

peak follower circuit means responsive to the output signals from said sensor elements for developing a peak output signal representative of the peak value of said output signals;

comparator means responsive to said peak output signal and to said compensated picture signal for developing an output signal when the peak output signal is greater than or equal to said compensated picture signal;

control signal generation means responsive to the output signal of said comparator for generating a first control signal and a second control signal, said control signal generation means including first and second control signal generating means, said first control signal generating means generating said first control signal when said output signal is generated twice in succession by said comparator means, said second control signal generating means generating said second control signal in response to the absence of said output signal for a predetermined time; and

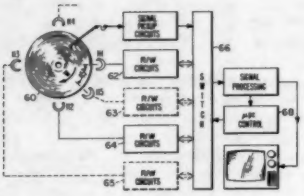
latch circuit means connected between said controller means and said memory means and responsive to said first and second control signals from the means for generating for storing an output signal from said controller means therein and for permitting said output signal from said controller means to enable said memory means in response to said first control signal and for preventing said output signal from said controller means for energizing said memory means in response to said second control signal.

4,383,276

VIDEO DISC PLAYER WITH A FREEZE FRAME FEATURE

Junzo Makino, Tokyo, Japan, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,666
Int. Cl.³ H04N *5/78*
U.S. Cl. 358—342 **14 Claims**



1. A video disc player of the type for reproducing signal from circular or spiral information tracks disposed on the surface of a capacitive type or optical type disc record, each circular track or spiral convolution having N frames of video signal recorded therein, N being an integer greater than one; said player comprising:

a turntable base having a first surface for rotatably supporting said disc record;

an endless stripe of magnetic material disposed on a second circumferential surface of said turntable and being susceptible of electrically recording information thereon;

at least two magnetic record/replay transducers disposed adjacent said magnetic stripe for recording and reproducing signal thereon, said transducers arranged at multiples of 360/N degrees with respect to each other so that N frames of said video signal may be recorded on said stripe;

signal pickup means cooperating with said disc record for the sole purpose of recovering signal therefrom;

means coupled with said signal pickup means and said transducers for applying selective frames of signal recovered by selective ones of said transducers or said pickup means to others of said transducers for recording or rerecording said selected frames on the magnetic stripe; and

means for selectively applying signal frames recovered from one of said transducers and said signal pickup means to a player output terminal in a sequence different from real time signal recovery from the disc record.

4,383,277

COPYING APPARATUS COMPRISING INTERCONNECTABLE COPYING MACHINES

Kikuo Kubo, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 937,960
Claims priority, application Japan, Sep. 6, 1977, 52-107127
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—258 **7 Claims**

1. A copying apparatus including a plurality of copying machines each having scanning means for scanning an original document and producing electrical signals corresponding thereto and printing means for reproducing an original document in response to electrical signals corresponding thereto, characterized by comprising:

switch means for selectively connecting at least one of the scanning means to at least one of the printing means;

signal mixing means, the switch means connecting the scanning means of one of the copying machines to the printing means of any of the copying machines through the mixing means;

a plurality of input gate means connected between respective scanning means and an input of the mixing means, a plurality of output gate means connected between an output of the mixing means and respective printing means and control means for controlling the switch means and input and output gate means;

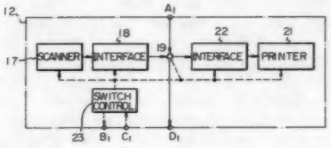
the control means being operative to control the apparatus to operate in an individual copying mode by controlling the switch means to connect the scanning means of each copying machine to the printing means thereof and to inhibit all of the input and output gate means.

2. A copying apparatus including a plurality of copying machines each having scanning means for scanning an original document and producing electrical signals corresponding thereto and printing means for reproducing an original document in response to electrical signals corresponding thereto, characterized by comprising:

switch means for selectively connecting at least one of the scanning means to at least one of the printing means;

signal mixing means, the switch means connecting the scanning means of one of the copying machines to the printing means of any of the copying machines through the mixing means;

a plurality of input gate means connected between respective scanning means and an input of the mixing means, a plurality



of output gate means connected between an output of the mixing means and respective printing means and control means for controlling the switch means and input and output gate means;

the control means being operative to control the apparatus to operate in an interlocked copy mode by controlling the switch means to disconnect the scanning means of each copying machine from the printing means thereof, to enable only one input gate means corresponding to a selected scanning means for scanning an original document and enabling at least two output gate means corresponding to selected printing means for reproducing the original document.

4. A copying apparatus including a plurality of copying machines each having scanning means for scanning an original document and producing electrical signals corresponding thereto and printing means for reproducing an original document in response to electrical signals corresponding thereto, characterized by comprising:

switch means for selectively connecting at least one of the scanning means to at least one of the printing means;

signal mixing means, the switch means connecting the scanning means of one of the copying machines to the printing means of any of the copying machines through the mixing means;

a plurality of input gate means connected between respective scanning means and an input of the mixing means, a plurality of output gate means connected between an output of the mixing means and respective printing means and control means for controlling the switch means and input and output gate means;

the control means being operative to control the apparatus to operate in a superimposed copy mode by controlling the

switch means to disconnect the scanning means of each copying machine from the printing means thereof, enable at least two input gate means corresponding to selected scanning means for scanning original documents and enabling at least one output gate means corresponding to at least one selected printing means for reproducing the superimposed original documents.

5. A copying apparatus including a plurality of copying machines each having scanning means for scanning an original document and producing electrical signals corresponding thereto and printing means for reproducing an original document in response to electrical signals corresponding thereto, characterized by comprising:

switch means for selectively connecting at least one of the scanning means to at least one of the printing means;

signal mixing means, the switch means connecting the scanning means of one of the copying machines to the printing means of any of the copying machines through the mixing means;

a plurality of input gate means connected between respective scanning means and an input of the mixing means, a plurality of output gate means connected between an output of the mixing means and respective printing means and control means for controlling the switch means and input and output gate means;

the control means being operative to control the apparatus to operate in a collation copy mode by controlling the switch means to disconnect the scanning means of each copying machine from the printing means thereof, sequentially enable input gate means corresponding to selected scanning means for scanning original documents and continuously enabling at least two output gate means corresponding to selected printing means for reproducing the original documents.

4,383,278

LIGHT BEAM MODULATING/DEFLECTING SYSTEM

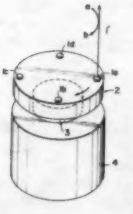
Shigeo Harada, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1981, Ser. No. 314,398

Claims priority, application Japan, Nov. 4, 1980, 55-155490

Int. Cl.³ H04N *1/04*

U.S. Cl. 358—285 **2 Claims**



1. A light beam modulating/deflecting system comprising a primary coil mounted on a fixed substrate, and a secondary coil secured to a rotating body provided with a light source, a high-frequency signal modulated with a predetermined light modulating signal being applied to said primary coil, whereby electric power which is required to activate said light source and modulated with said light modulating signal is supplied to said rotatable secondary coil through non-contacting electromagnetic coupling of said primary and secondary coils.

4,383,279

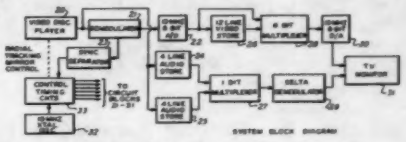
REPRODUCTION OF SPECIAL PURPOSE INFORMATION ON A VIDEO DISC

George C. Kenney, II, Stamford, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,553

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—341 **5 Claims**



1. A videodisc player comprising:

a playback apparatus,

a disc having video information and special purpose information in alternate tracks of said disc, said disc being rotatable upon said playback apparatus to provide video information and special purpose information as outputs of said playback apparatus,

an analog to digital converter for converting said video signals from said disc into digital signals,

a video storage circuit responsive to said analog to digital converter for storing a number of lines of video during a predetermined period of the rotation of said disc,

a video multiplexer for multiplexing said input video with said stored video,

an output video digital to analog converter for converting the output signals of said multiplexer to analog signals,

a special purpose information storage circuit for storing a number of data of said special purpose information during a predetermined period shorter than said video storage period,

a radial tracking mirror, and

a control and timing circuit causing said radial tracking mirror at said predetermined periods to jump between said video information track and said special purpose information track in order to provide continuous video and special purpose information signals.

4,383,280

RECORDER WITH TIMING CHANNEL

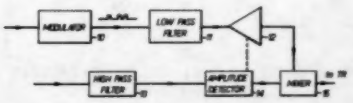
Peter Copeland, 11, June Close, Pagham, Bognor Regis, Sussex PO21 4UH, England

Filed Aug. 6, 1979, Ser. No. 63,728

Claims priority, application United Kingdom, Aug. 16, 1978, 33525/78

Int. Cl.³ G11B *5/02*; H04J *1/02*; H04L *9/00*

U.S. Cl. 360—18 **4 Claims**



1. Apparatus for a recorded signal having a predetermined signal spectrum comprising:

a first channel for carrying timing data, and a second channel for carrying said signal;

a modulator located in said first channel for modulating a carrier, offset from said signal spectrum, with serialized data corresponding to a time code, the modulation of said carrier being a pulse code modulation;

a filter located in said first channel and coupled to an output terminal of said modulator, said filter reducing the spec-

trum of said pulse code modulation to the reduced spectrum of a substantially triangular waveform, thereby inhibiting an overlapping of the modulation spectrum and said signal spectrum;

means, coupled to an output terminal of said filter and responsive to the average level of said signal in said second channel, for controlling the amplitude of the output signal of said filter; and

means for combining said filter output signal of said first channel with said signal of said second channel for feeding to a recording head, said amplitude controlling means maintaining a fixed ratio of recording level between signals of the two channels.

4,383,281

METHOD AND ARRANGEMENT FOR MAGNETIC DIGITAL RECORDING WITH HIGH FREQUENCY BIASING WITH SUPPRESSION OF DC COMPONENTS IN THE RECORDING SIGNALS

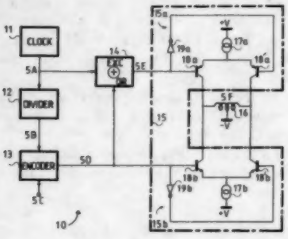
Jean-Paul Lesieur, Massy, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 24, 1980, Ser. No. 162,421

Claims priority, application France, Jul. 2, 1979, 79 17172

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—45 **8 Claims**



1. A circuit arrangement for magnetic recording of a digital data signal composed of a set of transitions comprising magnetic biasing means for delivering a high frequency, constant amplitude, original biasing signal and means for combining the said digital data signal with the said magnetic biasing signal so as to provide a recording signal, said combining means comprising a current switch device connected to receive complementary formats of the data signal, a recording winding connected to said switch device to produce the recording signal, and a current source supplying the said current switch and controlled by strong or weak currents, means for phase modulating the original biasing signal relative to the data signal transitions and means connected to said phase modulating means for shaping the modulated biasing signal so as to suppress the D.C. components in the recording signal.

4,383,282

CAPSTAN DRIVE TYPE MAGNETIC RECORDING TAPE DRIVE APPARATUS

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 180,391

Claims priority, application Japan, Aug. 30, 1979, 54-110725; Aug. 30, 1979, 54-110726; Aug. 30, 1979, 54-110727; Aug. 30, 1979, 54-110728

Int. Cl.³ G11B *15/00, 17/00*

U.S. Cl. 360—96.3 **8 Claims**

1. A capstan drive type magnetic recording tape apparatus comprising:

a chassis;

a pair of reels on which is wound a magnetic recording tape;

a first reel shaft rotatably mounted on said chassis for engagement with and rotation with one of said pair of reels;

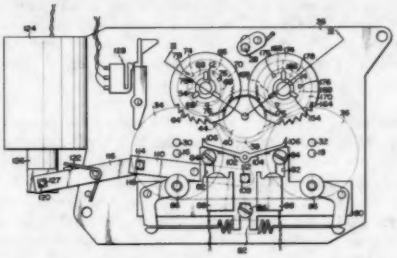
a second reel shaft rotatably mounted on said chassis for engagement with and rotation with the other of said pair of reels;

a first slipping member rotatably mounted on said first reel shaft;

a second slipping member rotatably mounted on said second reel shaft;

a driving force transmitting means coupled to a drive means for selectively transmitting a driving force provided by said drive means to either said first slipping member or said second slipping member to cause said recording tape to travel in one or the other directions;

a swinging member swingably mounted to said chassis for prohibiting rotation of said first slipping member by engaging said first slipping member when said magnetic recording tape is traveling in one direction and for prohibiting rotation of said second slipping member by engaging said second



slipping member when said magnetic recording tape is traveling in the other direction;

a first connecting means interposed between said first reel shaft and said first slipping member for rotatably connecting said first reel shaft with said first slipping member so as to transmit said driving force from said first slipping member to said first reel shaft, and for controlling the rotation of said first reel shaft relative to said first slipping member according to the difference between the rotational torque produced on said first reel shaft and the rotational torque produced on said first slipping member; and

a second connecting means interposed between said second reel shaft and said second slipping member for rotatably connecting said second reel shaft and said second slipping member so as to transmit said driving force from said second slipping member to said second reel shaft, and for controlling the rotation of said second reel shaft relative to said second slipping member according to the difference between the rotational torque produced on said second reel shaft and the rotational torque produced on said second slipping member.

4,383,283

DUAL MINI-DISK DRIVE

Dan M. Machut, Torrance, Calif., assignor to Digital Equipment Corp., Maynard, Mass.

Continuation-in-part of Ser. No. 84,508, Oct. 12, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,834

Int. Cl.³ G11B *5/55, 21/08*

U.S. Cl. 360—97 **11 Claims**

1. A magnetic storage system comprising:

a rotatable member having a track with a circular component disposed about an axis and a translational component perpendicular to the circular component to define a pitch, the pitch of the track having alternating rest zones and transition zones, the pitch of the transition zones being continuously variable between the rest zones;

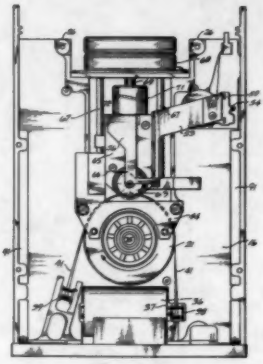
means for rotatably driving the member about the axis;

a magnetic head support including means for engaging the

track such that the head support translates parallel to the translational component as the member rotates;

a magnetic transducer head mounted on the head support; and

means for transporting a magnetic storage medium past the



head transverse to the translational component, the medium having a magnetic surface parallel to the translational component, the magnetic surface having data tracks transverse to the translational component that correspond in position to the rest zones.

4,383,284

PERPENDICULAR MAGNETIC HEAD AND METHOD OF MANUFACTURING THE SAME

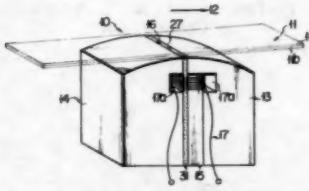
Masanori Isshiki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 4, 1980, Ser. No. 204,051

Claims priority, application Japan, Dec. 14, 1979, 54-162605; Dec. 14, 1979, 54-162607; Dec. 14, 1979, 54-162609

Int. Cl.³ G11B *5/12, 5/20, 5/22*

U.S. Cl. 360—125 **12 Claims**



1. A perpendicular magnetic head capable of magnetizing a magnetic layer of a magnetic recording medium having said magnetic layer on one side and moved relative to said magnetic head, said magnetic layer being magnetized in the direction of the thickness thereof, said magnetic head comprising:

a block core of a high magnetic permeability material;

a thin film core mounted on said block core and having a pole section extending toward a magnetic surface of said magnetic recording medium, said pole section providing a width smaller in the direction of the track width of said magnetic recording medium than that of said block core and having at the end a pole face in contact with the magnetic surface of said magnetic recording medium, said thin film core including a thin film of a high magnetic permeability material; and

an exciting coil wound on said thin film core and said block core, through said exciting coil current corresponding to an electric signal to be recorded on said magnetic recording medium being supplied, whereby a magnetic flux corresponding to said exciting current produced in said thin film core is coupled to said magnetic recording medium in the direction of the thickness thereof.

4,383,285

MEMORY ERROR SIGNAL DEVICES FOR TAPE CASSETTES WITH MEMORY

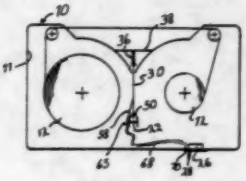
Theophiel C. J. L. Staar, Genappe, Belgium, assignor to Staar S.A., Belgium

Filed Nov. 10, 1980, Ser. No. 205,751

Claims priority, application Belgium, Sep. 5, 1980, 201997

Int. Cl.³ G11B *27/24, 23/04*

U.S. Cl. 360—132 **24 Claims**



1. A cassette of recording tape having a housing, tape and reel means, means for restraining tape from moving, an opening in said housing for a member of a peripheral device to penetrate to free tape for movement, an electronic memory in said housing for storing data relating to said cassette or the tape therein, and a memory error signal device in said housing having two states representing that said memory has an error or no error, respectively, said memory error signal device having terminal means for establishing an electrical connection to a peripheral device for monitoring and for changing the state of said signal device, said terminal means including an element adjacent said opening and in the path of a peripheral device member penetrating said opening.

4,383,286

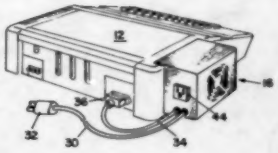
COOLING AND POWER INPUT ASSEMBLY

Roy T. Hicks, 566 Irelan, Buellton, Calif. 93427

Filed Apr. 9, 1982, Ser. No. 367,009

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **11 Claims**



1. A cooling assembly for an electrical equipment having a series of ventilation openings comprising:

a housing open on one side and having a fan outlet grille on the opposite side thereof, said housing having front and rear sides, and a top and bottom;

fan means mounted in said housing for exhausting air from the electrical equipment through the ventilation openings;

means for channelling air drawn from the ventilation openings into the open side of said housing to said fan means and toward said outlet grille,

said means including a panel extending substantially vertically between said top and bottom and the front and rear sides of said housing, said panel having a substantially

centrally located opening, and said panel being spaced back from the open side of said housing, on the other side of said fan means from said outlet grille;

means for holding said assembly in place with the open side of said housing against said electrical equipment for drawing air from the ventilation slots, said holding means including:

finger means extending outwardly from the open side of said assembly substantially perpendicular to said housing, and said finger means having downwardly extending hook means for extending inside the electrical equipment and for holding said housing in against the electrical equipment;

electrical wiring means for supplying power to said fan and to the electrical equipment, connected to said housing; and

switch means mounted on said housing for turning on said fan and simultaneously supplying power to the elec ical equipment.

4,383,287

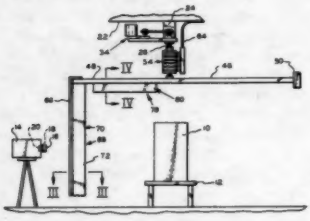
PHOTOGRAPHY LIGHTING SYSTEM

Frank E. Fette, 1006 Oakridge Dr., Jackson, Mich. 49203

Filed Sep. 4, 1981, Ser. No. 299,404

Int. Cl.³ G03B *15/03*

U.S. Cl. 362—18 **11 Claims**



1. The method of lighting a subject being photographed to produce a uniform highlight upon the subject across the width thereof to improve contrast and depth perception wherein the camera includes an aperture and lens controlling the amount of light entering the camera, the subject including front, rear and lateral sides with respect to the camera location, comprising the steps of opening the camera aperture to a predetermined opening, illuminating the subject from a substantially uniform vertically oriented light source having a vertical dimension greater than the vertical dimension of the subject, and translating said light source across the front and lateral sides of the subject at a predetermined rate of movement to illuminate the subject at said front and lateral sides.

4,383,288

ADJUSTABLE LIGHT COLLECTOR AND SAMPLER THEREFOR

John E. Hess, II, Monroeville, and Robert C. Braumuller, Pittsburgh, both of Pa., assignors to Conservolite, Inc., Oakdale, Pa.

Filed Sep. 12, 1980, Ser. No. 186,647

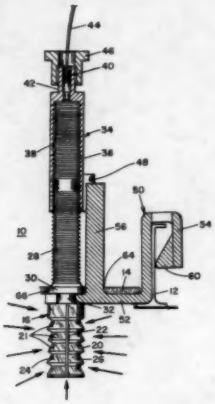
Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **22 Claims**

1. An adjustable light collector for use in a system adapted to continuously control the intensity of light present in an area irradiated at least in part by artificial means comprising:

means positioned within the area for sampling the light present in the area;

means for receiving a portion of said sampled light and transmitting at least part of said received portion to the device of the control system that converts light to electrical energy; and



said sampling means including means for mechanically changing the amount of light received by said receiving means from said sampling means upon the repositioning of said changing means.

4,383,289

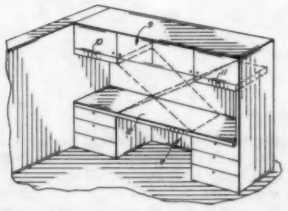
TASK LIGHTING FIXTURE FOR CONCENTRATING ILLUMINATION

Ian Lewin, 11408 St. Andrew's Way, Scottsdale, Ariz. 85254

Filed Dec. 15, 1980, Ser. No. 216,364

Int. Cl.³ A61G *13/00*

U.S. Cl. 362—33 **7 Claims**



1. A lamp fixture for concentrating illumination on a work area beneath and offset to the side of the fixture including in combination:

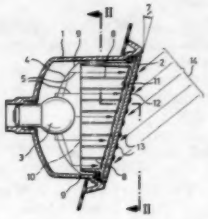
an open reflector, the transverse parallel vertical cross-sections of which are identical and comprise short and long compound curves joined together to form a cusp, with the long compound curve thereof extending toward the work area on which illumination is to be concentrated; and

at least one elongated fluorescent bulb with its axis parallel to the cusp of said reflector and the axis thereof located on a line dissecting the cusp of said reflector, said line being substantially parallel to the offset beam of light produced by the fixture.

4,383,290
SIGNAL LAMP

Helmut Binder, Bietigheim-Bissingen; Gerhard Haar, Leinfelden; Eckhardt Schmid, Guglingen, and Hans-Joachim Wirth, Heilbronn, all of Fed. Rep. of Germany, assignors to ITT Industries Inc., New York, N.Y.

Continuation of Ser. No. 944,803, Sep. 22, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,054
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743777; Aug. 16, 1978, 2835808
Int. Cl.³ F21V 9/00
U.S. Cl. 362—290 27 Claims

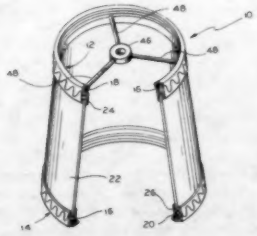


1. A signal lamp comprising:
a housing;
a reflector for producing a substantially parallel bundle of light rays;
a lens closing the housing in the direction of exit of said light rays;
a plurality of substantially parallel vertically spaced apart diaphragms mounted behind said lens;
a plurality of substantially parallel vertically spaced-apart horizontal transverse stripes on the outside of said lens, each of said stripes being relatively non-reflective and each of said stripes being arcuate along its length when viewed from the front of said lens such that each stripe approximates a circular segment having a radius greater than the radius of said lens;
each of said diaphragms comprising a cylindrical segment having a radius greater than the radius of said lens such that each diaphragm is arcuate in shape when viewed from the front of said lens and each of said diaphragms being in registered alignment with a corresponding one of said plurality of stripes.

4,383,291
LAMP SHADE ASSEMBLY KIT

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,024
Int. Cl.³ F21V 1/06
U.S. Cl. 362—352 14 Claims

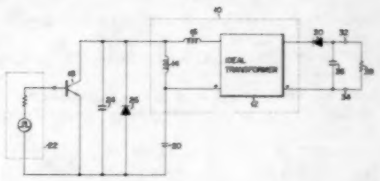


1. A kit for forming a lamp shade, comprising:
an upper assembly ring and a lower assembly ring, said assembly rings each being substantially identically formed of flexible material into a closed loop having a channel opening generally inwardly about the periphery thereof, said channels each being defined by a lip portion spaced from and generally parallel to a ramp portion thereof;
a pair of hoops formed of rigid material for insertion into said channels in said upper and lower assembly rings, said hoops cooperating with said channels after insertion to give a selected shape to said assembly rings, said channels having oversized diametral recesses to facilitate insertion of said hoops into said channels, said lip and ramp portions of said channels being spaced apart from one another by a distance equal to or greater than the thickness of said hoops;
a cover member formed of flexible material into a continuous, open-ended configuration having upper and lower edges, said cover member having a dimension about the periphery of said upper edge substantially the same as the dimension about the periphery of said upper assembly ring, said cover member having a dimension about the periphery of said lower edge substantially the same as the dimension about the periphery of said assembly ring; and
means for securing said upper edge of said cover member to said upper assembly ring and said lower edge of said cover member to said lower assembly ring.

4,383,292
SINGLE-ENDED SWITCHING CONVERTER

Toshihiro Onodera, Kunitachi; Youichi Masuda, Yokohama, and Akira Nakajima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 17, 1981, Ser. No. 255,094
Claims priority, application Japan, Apr. 22, 1980, 55-52354
Int. Cl.³ H02P 13/22
U.S. Cl. 363—21 14 Claims



1. A single-ended switching converter comprising:
a. a transformer having primary side inputs, secondary side outputs, and a primary inductance L_1 and a leakage inductance L_2 satisfying the condition:

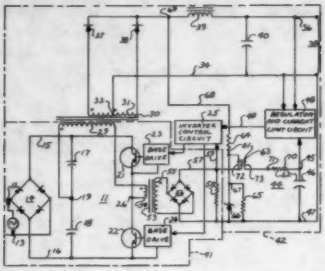
$$L_1/10 \leqq L_2;$$

b. switching means connected to the primary side inputs of said transformer for performing on-off operation according to a predetermined signal, said switching means supplying current from a DC power supply to said transformer when said switching means is in the "on" state;
c. a capacitor connected in parallel with said switching means and having a predetermined capacitance;
d. first means connected in parallel with said switching means to be conductive when the potential on one terminal of said capacitor becomes a predetermined potential, for preventing the potential on said one terminal of said capacitor from becoming lower than said predetermined potential; and
e. second means connected to one of said secondary side outputs of said transformer to be conductive during the "on" state of said switching means, for supplying a load with power generated from the DC power supply, said load being connected between said second means and another secondary side output of said transformer.

4,383,293
ISOLATED DC CURRENT SENSE CIRCUIT

Ronald H. Randall, Cuba, N.Y., assignor to Acme Electric Corporation, Cuba, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,458
Int. Cl.³ H02M 3/335
U.S. Cl. 363—25 **20 Claims**



1. An output current sensing circuit for a converter circuit converting between AC and DC and having at least one controllable power semiconductor with a converter control circuit connected to control the conduction time of the semiconductor, said output current sensing circuit comprising, in combination:

a current transformer having primary and secondary windings;

means connecting said primary winding in an alternating current portion of the converter circuit for current flow therethrough proportional to an output of the converter circuit;

rectifier means connected to rectify the output of the secondary winding of said current transformer;

a first resistor connected to the output of said rectifier means;

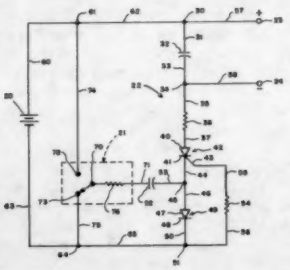
means to sample the voltage across said first resistor only during the conduction periods of the power semiconductor; and

means to integrate said sampled voltage to develop an output current signal proportional to the output current from the converter circuit.

4,383,294
VOLTAGE DOUBLER WITH DELAYED LOADING

Peter H. Van Sloun, 207 - 18th Ave. N., Hopkins, Minn. 55343

Filed Apr. 23, 1981, Ser. No. 257,306
Int. Cl.³ H02M 7/00
U.S. Cl. 363—60 **3 Claims**



1. A power supply comprising, in combination:

a source of unidirectional voltage, comprising a reserve battery, having first and second terminals of opposite polarity;

a series circuit connected across said source including in sequence a first capacitor and first and second unidirectional conductors oriented for conduction in the same direction to charge said first capacitor from said source;

means for connecting a load, to be energized from said source, across said first capacitor;

a second capacitor having a first terminal, connected to said series circuit between said unidirectional conductors, and a second terminal;

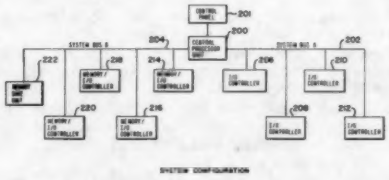
switching means energizable to alternately connect said second terminal of said second capacitor to said terminals of said source;

and means, including one of said unidirectional conductors, initially preventing flow of current from said source, and effective after a first positive alternation of said switching means to enable flow of current from said source.

4,383,295
DATA PROCESSING SYSTEM HAVING DATA ENTRY BACKSPACE CHARACTER APPARATUS

Robert C. Miller, Braintree; John J. Bradley, Framingham; Boyd E. Darden, Concord; Ming T. Miu, Chelmsford; Jian-Kuo Shen, Watertown, and Theodore R. Staplin, Jr., Chelmsford, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 9, 1979, Ser. No. 11,001
Int. Cl.³ G06F 9/06
U.S. Cl. 364—200 **12 Claims**



1. A data processing system comprising a central processing unit (CPU), a main memory, a first input/output controller (IOC), and a peripheral device, said CPU coupled to said main memory for the bidirectional transfer of data units therebetween, said CPU coupled to said first IOC by means of a common bus for the bidirectional transfer of data units therebetween, said first IOC coupled to said peripheral device, said CPU including backspace operation logic comprising:

A. first means, included in said CPU, for receiving a backspace interrupt signal from said first IOC via said common bus, said backspace interrupt signal indicating that said first IOC has received a backspace data unit from said peripheral device connected to said first IOC and that said CPU is to effectively remove the last data unit in an input buffer in said main memory associated with said first IOC; and

B. second means, coupled to said first means and included in said CPU, for effectively removing the last data unit in said input buffer in response to said backspace interrupt signal; wherein said second means further comprises:

A. third means for maintaining an input buffer pointer to a next data unit location in said input buffer for storing a next data unit received from said first IOC;

B. fourth means, coupled to said third means and said first means, for adjusting said third means to point to a data unit location in said input buffer preceding said next data unit location in said input buffer in response to said first means receiving said backspace interrupt signal;

C. fifth means for maintaining an input buffer range counter of the number of data units remaining to be transferred to said input buffer; and

D. sixth means, coupled to said fifth means and said first means, for adjusting said input buffer range counter of said fifth means to compensate for the effective removal of one data unit from said input buffer; whereby the detection of a backspace operation is performed by said first IOC and/or said peripheral device and adjustment of said input buffer is performed by said CPU.

4,383,296

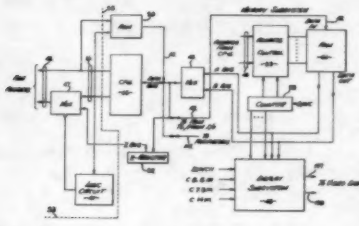
COMPUTER WITH A MEMORY SYSTEM FOR REMAPPING A MEMORY HAVING TWO MEMORY OUTPUT BUSES FOR HIGH RESOLUTION DISPLAY WITH SCROLLING OF THE DISPLAYED CHARACTERS

Wendell B. Sander, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 16, 1980, Ser. No. 150,630

Int. Cl.³ G06F *13/06, 3/14*

U.S. Cl. 364—200 **22 Claims**



1. In a digital computer which includes a central processing unit (CPU), a random-access memory (RAM), an address bus interconnecting said CPU and RAM such that said CPU addresses locations in said RAM and a data bus interconnecting said CPU and RAM, said CPU for certain functions addressing predetermined locations in said RAM with a predetermined range of address signals, an improvement comprising:

detection means for detecting said predetermined range of address signals, coupled to said address bus;

register means for storing digital signals, coupled to said data bus, and;

switching means for coupling said digital signals stored in said register means to said address bus when said detection means detects said predetermined range of said address signals;

whereby data for said certain functions normally stored by said CPU in said predetermined locations may be stored elsewhere in said RAM, thereby enhancing the performance of said computer.

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DATA PROCESSING SYSTEM INCLUDING INTERNAL REGISTER ADDRESSING ARRANGEMENTS

Nigel J. Wheatley, Broadstone, and Martyn P. Andrews, Taplow, both of England, assignors to Plessey Overseas Limited, Ilford, England

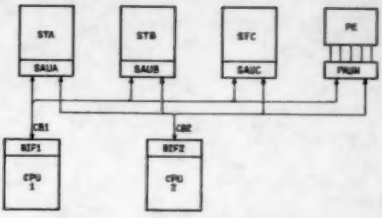
Filed Sep. 29, 1980, Ser. No. 191,850

Claims priority, application United Kingdom, Sep. 29, 1979, 7933858

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **4 Claims**

1. A data processing system including one or more processing units, a plurality of storage modules and a plurality of peripheral equipments, and each storage module and each peripheral equipment being provided with an access unit and each processing unit being provided with an associated unique data communication path which is connected to an individual port on each access unit, each access unit including means for storing a unique identity code indicative of the system identity of the associated art, each access unit further including an identity address recognition circuit which activates the access unit upon receipt of an associated identity code, a processing unit access operation involving a peripheral equipment or storage module location being performed by the processing unit associated with a communication path of the processing unit, an address comprising at least two fields, the first address filed defining the system identity of the required storage module or peripheral equipment and the second address field defining a location within the required storage module or peripheral equipment, wherein the improvement comprises in each processing unit a bus interface unit connected to a unique data communication path of each processing unit and an internal



register selection means and said bus interface unit includes identity storing means for storing an identity code indicative of the processing unit and an identity address recognition means arranged to compare the first field of an address extended to the data communication path with said identity code stored in said identity storing means and upon detection of said identity code of the processing unit in the first field of an address extended to the data communication path, said identity address recognition means being connected to the second field of the presented address to the internal register selection means so that a selected internal register can be used as the location for a processing unit access operation.

4,383,298

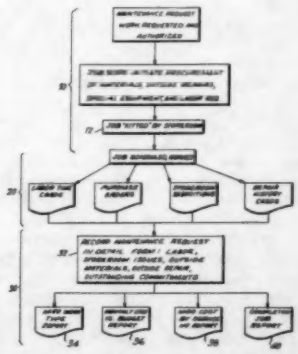
PLANT MAINTENANCE CONTROL SYSTEM

Robert G. Huff, Satsuma, and John O'Neill, Daphne, both of Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 10, 1980, Ser. No. 139,041

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—300 **18 Claims**



1. A plant maintenance control method by which control over maintenance expenses is established through a computer data base system, said method comprising:

providing a data base complex having at least four complete, non-redundant, individual data bases, each data base being composed of a plurality of data base records each of

which is adapted to contain data in a hierarchical structure comprising a root segment and dependent or subordinate segments,

establishing logical pointer relationships between at least said first data base and each of said other three data bases;

routing data through said computer to and from said data base complex;

accessing data from said individual data bases by searching segments selectively in each of the data bases based on a preordained selection method and in accordance with said established logical pointer relationships.

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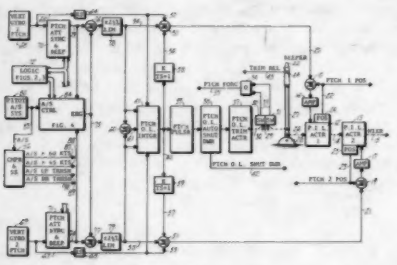
COMMAND-INHIBITED AIRCRAFT ATTITUDE REFERENCE ADJUSTMENT

William C. Fischer, Monroe; Don L. Adams, Fairfield; David J. Verzella, Guilford, and Stuart C. Wright, Milford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1981, Ser. No. 249,301
Int. Cl.³ G06F *15/50*; G06G *7/70*
U.S. Cl. 364—434 **2 Claims**



1. A system for positioning attitude-controlling aerodynamic surfaces of an aircraft, comprising:

attitude means for providing an actual attitude signal indicative of the actual attitude of the aircraft in a control axis thereof;

beeper means selectively operable by the pilot of the aircraft to provide a beep signal indicative of a selected rotational direction about said control axis;

actuator means responsive to a command input signal applied thereto for positioning said aerodynamic surfaces; and

signal processing means, connected for response to said attitude means and said beeper means, for providing, during the presence of said beep signal, an attitude reference signal indicative of the attitude desired for the aircraft in said control axis which is adjusted at a substantially constant rate in a direction corresponding to the rotational direction indicated by said beep signal, for providing an attitude error signal indicative of the difference between said attitude reference signal and said actual attitude signal, and for providing to said actuator means an attitude command signal indicative of a desired change in aircraft attitude in response to said attitude error signal;

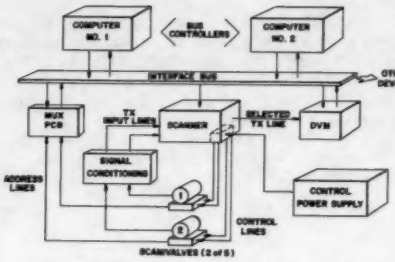
characterized by said signal processing means comprising means for maintaining said attitude reference signal constant even in the presence of said beep signal in response to said attitude error signal being of a sense corresponding to the rotational direction indicated by said beep signal and in excess of a predetermined magnitude.

4,383,300

MULTIPLE SCANIVALVE CONTROL DEVICE

Robert N. Geopfarth, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1980, Ser. No. 137,172
Int. Cl.³ G06F *15/20*; G01P *5/14*
U.S. Cl. 364—558 **1 Claim**



1. A controller which, when used in concert with a scanner and a digital voltmeter, allows selective real-time, on-line data acquisition from a plurality of multi-port pressure-monitoring instruments by manual control simultaneous with computer control by any computer compatible with a digital interface bus conforming to IEEE Standard 488-1975, each of said pressure-monitoring instruments having a single transducer output signal dependent upon which of said ports is interrogated comprising:

(a) a plurality of signal conditioning control sets, each of said sets receiving as input the output of one of said transducer output signals, said signal conditioning control sets providing span and balance voltage adjustment of said transducer output signals and having outputs to front panel test points on said controller and to said scanner;

(b) a plurality of manual control line switches connected with control lines parallel to control lines of said computer to relays in said scanner to effect a position control function in a selected pressure monitoring instrument whenever the electrical path of either of said control lines is completed;

(c) a power supply connected to said scanner, said manual control line switches and said signal conditioning control sets such that selective adjustment of said transducer output signals and selective energization of said relays is achieved;

(d) a printed circuit board receiving as inputs port address data from said transducer output signals and continuously displaying said port address data; and

(e) a multiplexing printed circuit board receiving as inputs port address data from said transducer output signals and interfacing with said digital interface bus such that said computer control of said data address interrogation may function independently and simultaneously with said manual control.

4,383,301

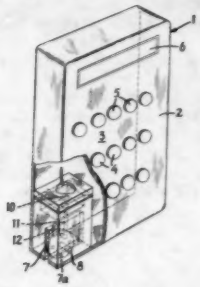
MEASURING AND CALCULATING INSTRUMENT

Deen I. Morita, 1658 Auiki St., Honolulu, Hi. 96819, and George M. Nakasone, 6944 Niumalu Loop, Honolulu, Hi. 96825

Filed May 5, 1977, Ser. No. 794,216
Int. Cl.³ G01B *5/26*
U.S. Cl. 364—562 **8 Claims**

1. A miniature hand-held calculator comprising a rectangular case of a size to be held conveniently in the hand, calculator circuitry in said case, a keyboard on said case comprising manually operable numerical keys and function keys and means operable by said keys for feeding data entries into said

circuitry and controlling the functions of said circuitry to perform arithmetic operations on said entries, display means providing a readout for said circuitry, a measuring wheel rotatably supported by said case and projecting beyond the perimeter of said case whereby said wheel can be rolled along a selected stationary line by manual movement of said hand-held calculator along said line, means for sensing rotation of said wheel and generating a unit signal pulse for each increment of rotation of said wheel, and means electrically connecting said sensing means with said calculator circuitry for feeding said unit signal pulses into said circuitry as units of measurement and for adding said units to obtain a total measurement entry representing the length of said line, whereupon said numerical keys and function keys of said keyboard are manually operable to perform additional arithmetic operations on said entry from said sensing means including multiplication of said entry by a selected number.

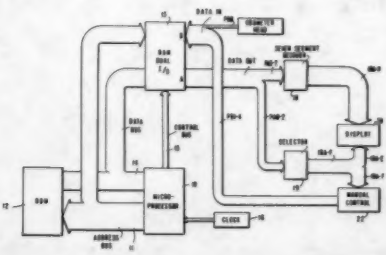


4,383,302

MICROCOMPUTER DEVICE HAVING SIMULTANEOUS INPUT AND OUTPUT FUNCTIONS

Charles W. Harris, Chesterfield, and Charles A. Gregory, Richmond, both of Va., assignors to Power Systems & Controls, Inc., Richmond, Va.

Filed Oct. 2, 1978, Ser. No. 947,694
Int. Cl.³ G01P 3/36
U.S. Cl. 364—565 **1 Claim**



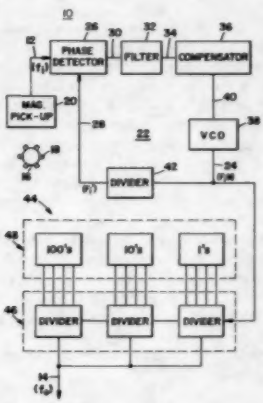
1. A method for measuring a variable as a function of time while simultaneously displaying a plural digit output in a display device capable of separate actuation of each digit display which comprises sequentially activating for display each digit display in an iterative sequence, generating an electric signal consisting of a series of pulses representative of said variable, activating a first control device to indicate when said variable is to be measured, activating a second control device to indicate when time is to be measured, checking in each iteration of activation of a said digit display whether said first control means is activated, when said first control means is found to be activated, checking to see whether there has been a pulse in said electric signal since the previous iteration, when a pulse is found to have occurred storing a count at a first location, then proceeding to the next iteration of display of a said digit display, the time in proceeding from one iteration of display of a said digit to the next being held to a fixed length regardless of whether said first control means is activated and whether a count is stored, continuing said iterations of display in said manner until said display is completed, thereafter checking whether said second control means is activated, when said second control means is found not to be activated repeating the above sequence, when said second control means is found to be activated, storing a count at a second location, repeating the display until both said first and second control means are found to be deactivated, thereafter dividing the stored count at said first location by the stored count at said second location, and displaying the quotient in said display.

4,383,303

FREQUENCY SIGNAL CONVERSION APPARATUS AND METHOD

John P. Hoffman, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01057, § 371 Date Dec. 5, 1979, § 102(e) Date Dec. 5, 1979
PCT Filed Dec. 5, 1979, Ser. No. 127,996
Int. Cl.³ G01P 3/48
U.S. Cl. 364—565 **6 Claims**



1. Apparatus (**10**) for determining the speed of rotation of a rotating member (**16**) having detectable elements (**18**), comprising:

(a) means (**20**) for detecting the elements (**18**) and generating a first frequency signal (f_i) proportional to the speed of rotation of the member (**16**) in response to detecting said elements (**18**);

(b) means (**38**) for multiplying the first frequency signal (f_i) by a value M and producing a second frequency signal (f_iM) in response to said multiplication;

(c) means (**42**) for dividing the second signal (f_iM) by the value M and producing a third frequency signal (f_o) in response to said division;

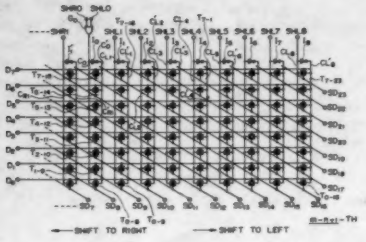
(d) means (**26**) for detecting a phase difference between the first signal (f_i) and the third signal (f_o); and,

(e) means (**44**) for dividing the second frequency signal (f_iM) by a value N and producing a fourth frequency signal (f_e) proportional to the speed of rotation of said member (**16**), wherein M is proportional to a desired number of detectable elements (**18**) of said rotating member (**16**) and N is proportional to the actual number of detectable elements (**18**) of said member (**16**).

4,383,304
PROGRAMMABLE BIT SHIFT CIRCUIT

Kunihiko Hirashima, Kofu, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,659
Claims priority, application Japan, Oct. 5, 1979, 54-128583
Int. Cl.³ G06F 7/00
U.S. Cl. 364—715 4 Claims



1. A programmable bit shift circuit for shifting an input multi-bit binary number selectivcly either leftwardly or rightwardly in a single step, comprising:

m input data lines;

n output data lines, where n is at least m+2;

k control lines, where k is at least 3 and is equal to a total number of possible bit position shifts in both leftward and rightward directions plus 1; and

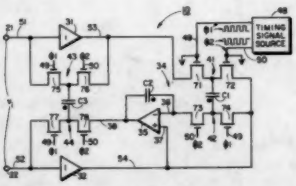
k-m switching elements arranged in a k-by-m rectangular array, each of said input data lines being connected to inputs of each of said switching elements in a corresponding row of said array, each of said control lines being connected to control electrodes of each of said switching elements in a corresponding column of said array, and each of said output lines being connected to outputs of said switching elements along a corresponding diagonal line of said array;

wherein said input data is shifted by a selected predetermined number of bit positions in a desired one of leftward and rightward directions by activating a selected one of said control lines corresponding to said selected predetermined number of bit positions and said desired one of leftward and rightward directions with a delay determined entirely by a delay time of a single one of said switching elements.

4,383,305
SIMULATION CIRCUIT EMPLOYING SWITCHED CAPACITORS

Man S. Lee, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 22, 1980, Ser. No. 219,035
Int. Cl.³ G06G 7/62; H03H 11/00
U.S. Cl. 364—802 27 Claims



5. An integratable switched capacitor floating impedance element which may be the parallel combination of an inductor and a capacitor, comprising:

first and second nodes adapted for receiving an input voltage;

first and second voltage follower means having input terminals connected to said first and second nodes, respectively, and having output terminals across which the input voltage is established;

a first capacitor having a capacitance C1;

integrator means including a second capacitor having a capacitance C2 associated therewith, and having an input and an output terminal;

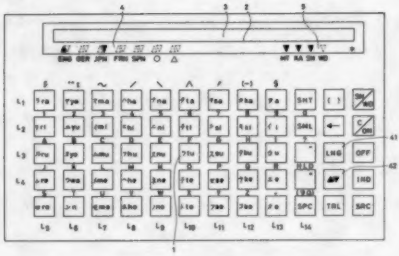
a third capacitor having a capacitance C3; and

switch means associated with said first and third capacitors and being periodically operative in first and second non-overlapping switch states; operation of said switch means in the first state electrically connecting said first and third capacitors across the outputs of said voltage followers and across the nodes, respectively, for sampling and storing an input voltage; operation of said switch means in the second state electrically connecting said first capacitor to the input terminal of said integrator means for causing it to integrate the charge on said first capacitor and produce an output voltage that is proportional to the integral of the input voltage that is available at the output terminals of said voltage follower means, and electrically connecting said third capacitor between the output terminal of said integrator means and the output terminal of said first voltage follower means for causing said third capacitor to sample the integrated voltage; subsequent operation of said switch means in the next first state again electrically connecting said third capacitor to the nodes for discharging it from the sum of the input voltage and the integrated voltage to a new input voltage that is applied to the nodes.

4,383,306
ELECTRONIC TRANSLATOR FOR INDICATING THE KIND OF TRANSLATED TONGUE

Masafumi Morimoto, Yamatokoriyama; Kunio Yoshida, and Tosaku Nakanishi, both of Nara, all of Japan, assignors to Sharp, Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1981, Ser. No. 252,145
Claims priority, application Japan, Apr. 14, 1980, 55-49408
Int. Cl.³ G06F 15/38
U.S. Cl. 364—900 4 Claims



1. An electronic translator for converting a first word or words in a first language into a second word or words having an equivalent meaning in a second language, said first and second languages being selected from a plurality of languages greater than two, comprising:

language selecting means for selecting said first and second languages from any of said plurality of languages greater than two;

memory means storing a plurality of words in said plurality of languages therein, one of said plurality of words corresponding to said second word or words;

access means responsive to said languages selected by said language selecting means for searching said memory means to discover and recall said second word or words in

said second language corresponding in meaning to said first word or words in said first language; and

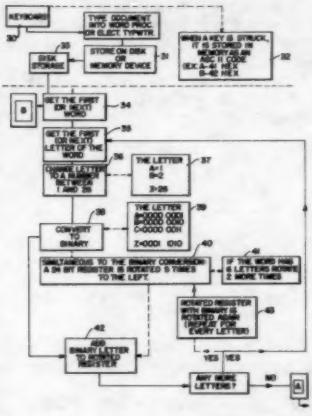
display means responsive to said access means for displaying said second word or word recalled by said access means, said display means further displaying said first and second languages selected by said language selecting means.

4,383,307

SPELLING ERROR DETECTOR APPARATUS AND METHODS

Stuart M. Gibson, III, Pound Ridge, N.Y., assignor to Software Concepts, Inc., Stamford, Conn.

Filed May 4, 1981, Ser. No. 259,998
Int. Cl.³ G06F 7/22
U.S. Cl. 364—900 **22 Claims**


KEYBOARD
TYPE DOCUMENT INTO WORD PROC. OR ELECT. TYPWTR.
30
20
ERASE STORAGE
STORE ON DISK OR MEMORY DEVICE
24
WHEN A KEY IS STRUCK, IF IS STORED IN MEMORY AS AN ASC II CODE (EX. A—41 HEX B—42 HEX
32
SET THE FIRST OR NEXT WORD
34
SET THE FIRST OR NEXT LETTER OF THE WORD
35
CHANGE LETTER TO A NUMBER BETWEEN 1 AND 26
36
THE LETTER A=1 B=2 Z=26
37
CONVERT TO BINARY
38
THE LETTER A=00000 0001 B=00000 0010 C=00000 0011 Z=0001 1010
39
40
SIMULTANEOUS TO THE BINARY CONVERSION A 5# BIT REGISTER IS ROTATED 5 TIMES TO THE LEFT
IF THE WORD HAS 6 LETTERS ROTATE 2 MORE TIMES
ROTATED REGISTER WITH BINARY IS ADDED TO FROM LEFT (RIGHT FOR EVERY LETTER)
43
42
ADD BINARY LETTER TO ROTATED REGISTER
YES
YES
ANY MORE LETTERS?
NO
A

1. A spelling error detector apparatus for use in detecting spelling errors in alphabetical words stored in a test memory associated with a word processor and indicative of a document to be printed from the stored words, comprising:

a code storage memory having stored therein a plurality of digital codes, each code derived from a separate alphabetical word by first translating all letters in said word to a first digital code, then forming an all zero digital word of a given number of fixed bits, then adding the first code of the first letter to said digital word and then rotating said added word a given number of bits and then adding the first code of the second letter to said rotated word and continuing said rotation and addition for all letters in said word to form said code as stored in said memory,

means for retrieving a word as stored in said text memory associated with said processor,

means for converting said retrieved word into a code according to said code as stored in said code storage memory including means for translating each letter of said stored word into a first digital code; register means for forming an all zero digital word and adding means for adding said first digital code of said first letter of said retrieved word to said all zero word and means for rotating said added word said given number of bits and then adding said first digital code of said second letter to said rotated word and means for continuing said rotation and addition for all letters in said retrieved word to form a code indicative of said stored codes,

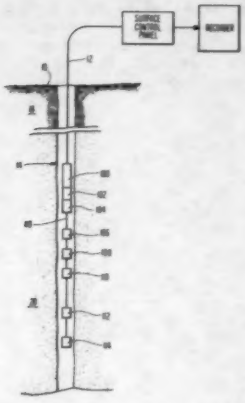
means for comparing said code formed as indicative of said retrieved word with said stored codes with a favorable comparison manifesting a correct spelling and with an unfavorable comparison manifesting an incorrect spelling.

4,383,308

ACOUSTIC WELL LOGGING DEVICE FOR DETECTING SHEAR AND COMPRESSIONAL WAVES

Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,921
Int. Cl.³ G01V 1/40, 1/16
U.S. Cl. 367—31 **18 Claims**



1. A well logging device for continuously logging the shear and compressional wave transmission characteristics of materials located adjacent to a borehole; comprising:

(a) a plurality of selectively activatable transmitters, said transmitters comprising at least a first multidirectional acoustic transmitter and a second point source acoustic transmitter;

(b) a plurality of receivers, at least one for each transducer, mounted on said device in spaced relation from said transmitters, said receivers comprising at least a first compressional wave receiver exhibiting a relatively greater sensitivity to acoustic waves produced by said first transmitter, and at least a second shear wave receiver exhibiting relatively greater sensitivity to acoustic waves produced by said second transmitter; and,

(c) sequencing means for selectively energizing each of said transmitters in response to the detection of at least one wave by at least one of said receivers;

4,383,309

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 17, 1981, Ser. No. 244,674
Claims priority, application Japan, Mar. 18, 1980, 55/34319
Int. Cl.³ G11B 17/04
U.S. Cl. 369—77 **7 Claims**

1. Apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for enabling said disc-shaped recording medium to go into and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said lid member having cutouts and ride-over parts, said reproducing apparatus comprising:

means defining an inserting opening through which said case may be inserted;

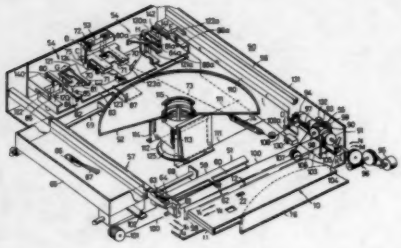
turntable means for rotating said disc-shaped recording medium;

clamping means provided at an innermost part on a side

opposite said inserting opening with respect to said turntable means, for clamping at least one of said disc-shaped recording medium and said lid member at a clamping position;

reproducing transducer means for reproducing said disc-shaped recording medium;

displacing means for displacing said disc-shaped recording medium to a position where said disc-shaped recording medium is placed on said turntable means and reproduced by said reproducing transducer means from said clamping position upon a starting of the reproduction and displacing said disc-shaped recording medium to said clamping position from said turntable means upon finishing or discontinuing the reproduction;



moving means for moving said reproducing transducer means from a waiting position to a reproducing position with respect to the disc-shaped recording medium;

driving source means comprising a single motor, for operating said moving means;

means for selectively changing over and transmitting the driving force of said driving source means via mechanical coupler means to said displacing means and said moving means;

means for rotating said turntable after said disc-shaped recording medium is placed onto said turntable means; and

controlling means for controlling said driving source means to operate said moving means at a speed which is selected from among a high speed, semi-high speed, and fast speed according to the operation mode of said reproducing apparatus.

4,383,310

PICKUP CARTRIDGE OF MOVABLE MAGNET TYPE

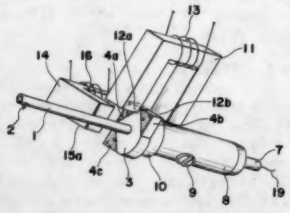
Masashi Itoh, Settsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1980, Ser. No. 202,697

Claims priority, application Japan, Nov. 1, 1979, 54-142665

Int. Cl.³ H04R *11/08, 11/12*

U.S. Cl. 369—136 **8 Claims**



1. A pickup cartridge of a movable magnet type comprising a shaft of cantilever provided with a needle point at its tip end and with a magnet holder at its rear end, a movable magnet provided on said magnet holder comprising a movable magnet having a magnetic axis parallel to a vertical axis orthogonal to the shaft of cantilever, and two movable magnets provided on said magnet holder and each having a magnetic axis parallel to a horizontal axis orthogonal to the shaft of cantilever, the movable magnet on said vertical axis side and the movable magnets on said horizontal axis side being magnetized in different magnetizing directions, a means for supporting said magnet holder to allow free angular motion thereof in a vibration system, and a pair of yokes each having generating coils wound therearound and pole pieces magnetically connected thereto, a pair of adjacent movable magnets among the said movable magnets provided on said magnet holder being arranged opposite the corresponding pole pieces of the yoke so as to form a generating portion.

4,383,311

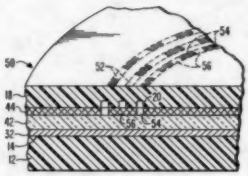
OPTICAL RECORDING MEDIUM AND INFORMATION RECORD WITH INDENTED OVERCOAT

Michael Ettenberg, Freehold, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,314

Int. Cl.³ G11B *7/26*

U.S. Cl. 369—275 **29 Claims**



1. In an optical recording medium which comprises

a substrate;

an absorptive layer which overlies the substrate and which is composed of a material which is absorptive of light at the wavelength of a recording light beam; and

an overcoat layer, contacting the absorptive layer, which is transmissive of light at the wavelength of the recording light beam;

the improvement which comprises:

the overcoat layer having one or more indentations in the surface which contacts the absorptive layer thereby forming first regions of the recording medium wherein the overcoat layer does not contact the absorptive layer and second regions wherein the overcoat layer does contact the absorptive layer and wherein the first regions are arranged as circular or spiral grooves spaced apart from one another by the second regions.

4,383,312

MULTIPLEX SYSTEM TESTER

Robert C. Reed, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 28, 1980, Ser. No. 211,011

Int. Cl.³ G06F *11/00;* **G01R** *31/28;* **H04B** *3/46;* **H04J** *3/14*

U.S. Cl. 370—13 **10 Claims**

1. An apparatus for testing a data transmission system including a set of data sources and a set of data sinks connected to a transmission bus comprising:

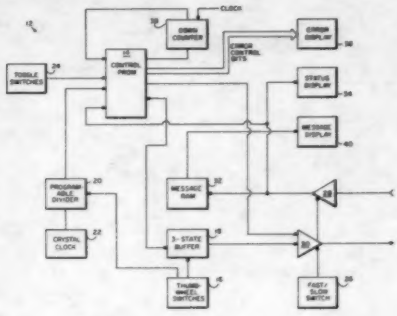
programmable means for providing a digital data message output in a programmable sequence;

first means connected to said programmable means for selectively and variably controlling the length of said data message, the rate of said data message, the destination of said data message, and the content of said data message;

status display means connected to said programmable means

for indicating the current point of progression of said programmable sequence;

error detecting means connected to said programmable means for determining whether said programmable means has stalled at a point of progression for more than a predetermined period of time;



error display means connected to said programmable means for indicating that said predetermined period of time has elapsed;

memory means for connection to said data transmission system for storing data transmitted to said apparatus via said transmission bus; and

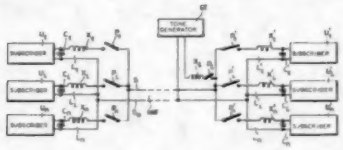
message display means for displaying the contents of said memory means.

4,383,313

TONE GENERATOR FOR PAM/TDM TELECOMMUNICATION SYSTEM

Anes Sbuelz, Milan, Italy, assignor to Italtel Societa Italiana Telecommunicazioni S.p.A., Milan, Italy

Filed Feb. 26, 1981, Ser. No. 238,575
Claims priority, application Italy, Feb. 29, 1980, 20253A/80
Int. Cl.³ H04J *3/20*
U.S. Cl. 370—51 **4 Claims**



1. In a PAM/TDM telecommunication system wherein a transmission path including a high-voltage conductor and a neutral conductor extends between two groups of two-wire subscriber lines and is provided at each end with selectively operable gating means for establishing temporary connections during respective time slots between subscriber lines of said groups, an active wire of each subscriber line being connectable by said gating means to the high-voltage conductor of said transmission path, each subscriber line having a storage capacitor connected across the wires thereof,

the combination therewith of a tone generator comprising:

a source of alternating voltage balanced with respect to ground;

a supply of direct current with a positive terminal and a negative terminal;

a pair of serially interconnected transistors of mutually opposite conductivity types with bases connected in parallel to said source, emitters jointly connectable to said high-voltage conductor, and collectors connected to said positive and negative terminals by way of respective series resistors;

two shunt condensers respectively inserted between said collectors and said neutral conductor;

a low-ohmic third resistor inserted between said neutral conductor and ground; and

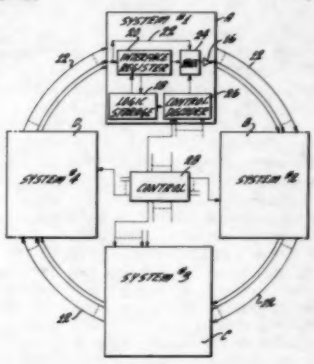
switch means synchronized with said gating means inserted between said emitters and said high-voltage conductor for periodically connecting one of said shunt condensers, determined by the instant polarity of said alternating voltage, via the collector and the emitter of a conductive transistor of said pair across said conductors for partial discharge into said storage capacitor of a selected subscriber line of one of said groups, said switch means and gating means disconnecting said high-voltage conductor from said emitters and from the active wire of the selected subscriber line during a subsequent guard interval with resulting cutoff of said conductive transistor whereby said one of said shunt condensers is recharged through the corresponding series resistor and said third resistor to generate a voltage drop across said third resistor for dissipating a residual charge stored on a parasitic capacitance of said conductors.

4,383,314

CIRCULAR ACCESS LINKAGE LOOP CONFIGURATION FOR SYSTEM COMMUNICATION

Richard K. W. Tam, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 956,051, Oct. 30, 1978, abandoned.
This application Jan. 12, 1981, Ser. No. 224,206
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—86 **4 Claims**



1. A current mode logic system of the type including a plurality of sequential logic modules which communicate to one another; the improvement comprising:

a current mode input gate and a current mode output gate in each of said modules in which an essentially constant current is switched through a pair of resistive elements to indicate the gate's logical state; said modules being connected output-gate-to-input-gate to form a loop for data transmission;

a single centralized control means, outside of said loop, having a plurality of control outputs for generating thereon a plurality of control signals in parallel;

each module of said plurality including a decode means coupled to preselected ones of said control outputs for indicating a Send mode, an Idle mode, and a Receive mode for a preselected time period in response to the control signals that it is sent by said control means;

each of said modules further including synchronized means for sending data from a respective storage means through

its current mode output gate in response to said Send mode, for receiving data on its current mode input gate and regenerating the same on its current mode output gate with no sequential logic delays therebetween in response to said Idle mode, and for storing data from its current mode input gate in response to said Store mode;

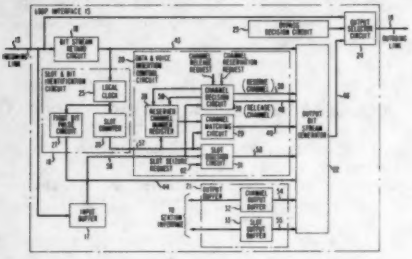
whereby multiple pairs of said modules can communicate simultaneously and in synchronization with each other over respective portions of said loop in response to said parallel control signals.

4,383,315

IDLE TIME SLOT SEIZURE AND TRANSMISSION FACILITIES FOR LOOP COMMUNICATION SYSTEM

Hwa C. Torng, Ithaca, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 20, 1981, Ser. No. 284,738
Int. Cl.³ H04J *6/00, 3/08*
U.S. Cl. 370—89 **30 Claims**



1. A method for controlling a seizure of an idle one of a plurality of time slots in a time division multiplex loop communication system to transmit a packet of data information bits over a loop transmission path thereof and in that idle time slot while it retains its idle status, each of said time slots comprising at least one busy-idle status bit and information bits, each said status bit being marked busy for the duration of a call served by the respective time slot and being marked idle during intercall periods, said method comprising

storing a packet of data information bits,

examining said status bit of each one of said slots to identify the idle or busy status thereof,

seizing an idle one of said time slots in response to said examining identifying said idle one of said time slots, and

transmitting over said loop transmission path in said idle one of said time slots an idle status bit and the stored said packet of data information bits.

4,383,316

APPARATUS FOR AND METHOD OF COLLATING PARTITIONED TIME DISORDERED SYNCHRONOUS DATA STREAMS

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 14, 1980, Ser. No. 140,312
Int. Cl.³ H04J *15/00*
U.S. Cl. 370—118 **18 Claims**

1. A digital transmission system arranged for transmission of a high-speed serial data stream between an originating end (**11**) and a terminating end (**29**) separated geographically

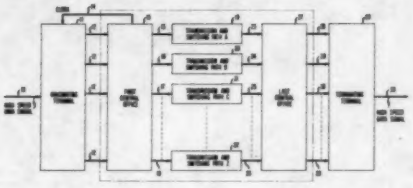
characterized by

at said originating end (**11**), means (**96**) for distributing said high-speed serial data stream either bit-by-bit or sample-by-sample and sequentially to a predetermined plurality of lower-speed channels (**12**), at least one of said lower-speed channels being different in length relative to the other channels,

means for asynchronously transmitting signals on each of said lower-speed channels in a message format including a start-of-message signal and an end-of-message signal,

at said terminating end (**29**),

means (**127,133 . . . 139**) for identifying each of said lower-speed channels (**28**), and



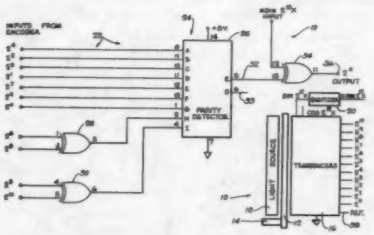
means (**125,159,161**) responsive to said start-of-message signals for collating the signals on said lower-speed channels (**28**) to derive said high-speed serial data stream.

4,383,317

SHAFT ANGLE ENCODER HAVING A CIRCUIT FOR SYNTHESIZING A SKIPPED TRACK OUTPUT SIGNAL

George D. Haville, Santa Barbara, Calif., assignor to BEI Electronics, Inc., Little Rock, Ark.

Filed Oct. 30, 1980, Ser. No. 202,165
Int. Cl.³ G06F *11/10;* **H03K** *13/34*
U.S. Cl. 371—51 **12 Claims**



1. A shaft angle encoder, comprising

a rotatable code member having a multiplicity of code tracks ranging in order from zero to n except for the omission of a skipped track having the order of n minus 1,

the track of zero order having the largest divisions while the track of the order n has the finest divisions,

signal producing means including transducer means for reading the tracks and producing corresponding electrical signals,

a parity detector having inputs for receiving the electrical signals corresponding to the tracks having the orders of zero through n minus 2 and for producing a corresponding even-/odd output indicated whether said last-mentioned signals are even or odd,

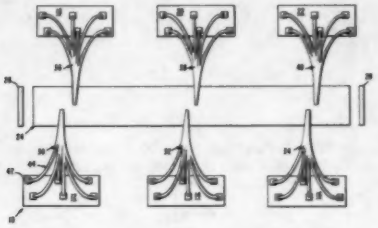
and an exclusive OR logic device having inputs for receiving the even/odd output of said parity detector and the electrical signal corresponding to the track of the order n,

said exclusive OR logic device producing an output which synthesizes the electrical output signals corresponding to the skipped track of the order n minus 1.

4,383,318
LASER PUMPING SYSTEM

James D. Barry, and Arthur J. Einhorn, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 15, 1980, Ser. No. 216,348
Int. Cl.³ H01S 3/09
U.S. Cl. 372—6 3 Claims



1. A laser pumping system for applying radiant electromagnetic energy to a lasing medium, said system comprising:

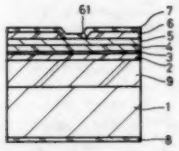
a plurality of sources of radiant electromagnetic energy; and

an optic tank for concentrating said radiant electromagnetic energy on a lasing medium; said optic link having a plurality of individual optic fibers at a proximal end thereof with each optical fiber being operably coupled to respective ones of said sources, and wherein said plurality converges longitudinally and continually to a single fiber at a distant end such that substantially all radiant electromagnetic energy which passes through said individual fibers passes through said single fiber to a predetermined area of said active medium.

4,383,319
SEMICONDUCTOR LASER

Hirokazu Shimizu, Toyonaka; Masaru Wada; Takashi Sugino, both of Takatsuki, and Kunio Itoh, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 2, 1980, Ser. No. 183,413
Claims priority, application Japan, Sep. 4, 1979, 54-113738
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 2 Claims



1. In a semiconductor laser the improvement comprising:

a semiconductor substrate,

a first semiconductor layer to work as an active region,

a second semiconductor layer and a third semiconductor layer to serve as clad layers disposed contacting the lower face and the upper face of said first semiconductor layer,

said first semiconductor layer having a thermal expansion coefficient equal to or smaller than that of said substrate,

said first semiconductor layer having a thermal expansion coefficient equal to or smaller than that of said substrate,

said second semiconductor layer and said third semiconductor layer having thermal expansion coefficients smaller than said first semiconductor layer,

said first semiconductor layer, said second semiconductor layer and said third semiconductor layer being epitaxial layers disposed on said semiconductor substrate and,

characterized in that

the semiconductor laser further comprises a fourth layer as a buffer layer on one of the underneath face of said second layer and the upper face of said third layer, said fourth layer having a thermal expansion coefficient smaller than that of said first semiconductor layer, and wherein said active layer is formed of a mixed crystal $Ga_{1-x}Al_xAs$ and said buffer layer is formed of a mixed crystal $Ga_{1-u}Al_uAs$ and t represents the buffer layer thickness and wherein the values x, u and t are selected in a range contained in a x-u-t three dimensional region defined by:

two parallel planes x=0.16 and x=0.24

two parallel planes u=0.4 and u=0.6 and a first upper face encircled by the following points:

a (x=0.16, t=11.4, u=0.4)

e (x=0.16, t=8.6, u=0.5)

h (x=0.24, t=12.6, u=0.5)

d (x=0.24, t=17, u=0.4)

and a second upper face encircled by the following points:

e (x=0.16, t=8.6, u=0.5)

i (x=0.16, t=6.8, u=0.6)

l (x=0.24, t=10.6, u=0.6)

h (x=0.24, t=12.6, u=0.5)

and a first lower face encircled by the following points:

b (x=0.16, t=5.0, u=0.4)

f (x=0.16, t=4.0, u=0.5)

g (x=0.24, t=7.3, u=0.5)

c (x=0.24, t=9.0, u=0.4)

and a second lower face encircled by the following points:

f (x=0.16, t=4.0, u=0.5)

j (x=0.16, t=3.3, u=0.6)

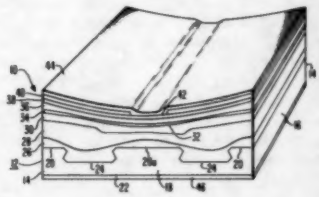
k (x=0.24, t=5.8, u=0.6)

g (x=0.24, t=7.3, u=0.5).

4,383,320
POSITIVE INDEX LATERAL WAVEGUIDE SEMICONDUCTOR LASER

Dan Botez, Mt. Holly, N.J., and Jerome K. Butler, Richardson, Tex., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 257,773
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 7 Claims



1. In a semiconductor laser comprising:

a body of semiconductor material including a substrate having a pair of opposed major surfaces, a pair of spaced, substantially parallel grooves in a first major surface of the substrate with a land therebetween, and a pair of end surfaces between which the grooves extend, at least one of which is partially transparent to light;

a first confinement layer overlying the first major surface of the substrate and the surfaces of the grooves;

a guide layer overlying the first confinement layer;

an active layer overlying the guide layer;

a second confining layer overlying the active layer;

a first electrically conducting layer overlying at least that portion of the second confining layer which is over the land;

a second electrically conducting layer overlying a portion of the second major surface of the substrate;

wherein the substrate, first confinement layer and the guide layer are of one conductivity type and the second confinement layer is of the opposite conductivity type and wherein the index of refraction of the active layer is greater than that of the guide layer and the index of refraction of the guide layer is greater than that of the first and second confinement layers; the improvement which comprises:

a guide layer having a surface contacting the active layer which has a concave shape in a lateral direction and which tapers in increasing thickness in the lateral direction from the land; and

an active layer which is thickest over the land and which tapers in decreasing thickness in the lateral direction.

4,383,321

CARBON ELECTRODE, IN PARTICULAR A GRAPHITE ELECTRODE FOR PRODUCING STEEL

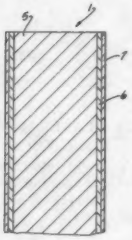
Franz Schieber, Röthenbach, and Dieter Mayer, Schwabach, both of Fed. Rep. of Germany, assignors to C. Conradty Nurnberg GmbH & Co KG, Pegnitz, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 221,028

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028348

Int. Cl.³ H05B *7/085*

U.S. Cl. 373—88 **11 Claims**



1. In a carbon electrode for an electric furnace, said electrode having a first coating comprising a metal containing composition, and said electrode having upon its surface an area connectable to the jaws of an electrode holder, the improvement therein comprising a second coating upon said first coating, said second coating comprising a graphite containing material, and said second coating covering at least said area on said electrode, whereby fusion of said jaws of said electrode holder to said electrode is prevented.

4,383,322

COMBINED USE OF PN SEQUENCE FOR DATA SCRAMBLING AND FRAME SYNCHRONIZATION IN DIGITAL COMMUNICATION SYSTEMS

Peter H. Halpern, Longwood; James W. Toy, and Charles R. Patisaul, both of Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 2, 1980, Ser. No. 146,338

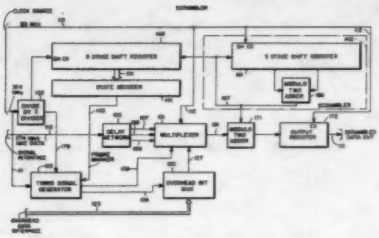
Int. Cl.³ H04K *1/02;* **H04B** *15/00;* **H04L** *7/08*

U.S. Cl. 375—1 **51 Claims**

2. A data scrambler system comprising:

first means for receiving a serial data signal stream to be scrambled; and

second means for combining the data signals of said serial data signal stream with a prescribed scrambling signal sequence in such a manner as to scramble the data signals of said serial data signal stream and to insert respective



signals of said prescribed scrambling signal sequence between preselected ones of the scrambled data signals.

4,383,323

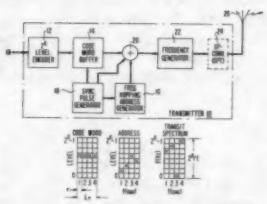
SPREAD SPECTRUM FH-MFSK TRANSMITTER AND RECEIVER

Uzi Timor, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 9, 1980, Ser. No. 157,267

Int. Cl.³ H04J *6/00;* **H04K** *1/00*

U.S. Cl. 375—1 **8 Claims**



1. A decoding arrangement for use in a spread spectrum radio receiver (**30**) which receiver is capable of receiving one or more frequency-hopping, multilevel frequency shift keyed (FH-MFSK) signals which were remotely transmitted by modulating a separate one of a plurality of different L-length frequency-hopping address sequences with each user's separate signal sample where each signal sample is encoded as one of Q possible frequencies, where Q is a prime or an integer power of a prime and the address sequences of all users have a common algebraic structure and the particular address of each user is determined by that user's unique parameter; the decoding arrangement comprising:

spectrum analyzing means (**36**) capable of generating, in response to a received signal, an output signal indicating each of the possible Q frequencies in the received FH-MFSK signal during each period of the L-length sequence characterized in that

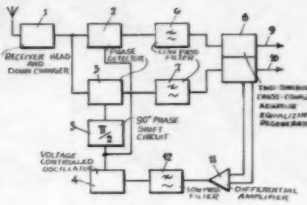
the received FH-MFSK signals were originally formed by adding corresponding elements of each user's signal sample and each user's associated frequency-hopping address sequence in accordance with the rules of algebra for finite fields during each period of the L-length sequence; the decoding arrangement further comprising:

a processor (**44**) comprising means (60_1–60_L, **62**, **64**, **66**) capable of decoding the received signals by subtracting a desired user's frequency-hopping address sequence from the time-period output signals from the spectrum analyzing means during each L-length sequence in accordance with the rules of algebra for finite fields to generate a Q level by L-length set of decoded signals.

4,383,324
DIGITAL DATA TRANSMISSION SYSTEMS

Michael T. Dudek, and John M. Robinson, both of Middlesex, England, assignors to The General Electric Company Limited, London, England

Filed Nov. 5, 1980, Ser. No. 204,289
Claims priority, application United Kingdom, Nov. 16, 1979, 7939800; Dec. 5, 1979, 7942008
Int. Cl.³ H03D 3/20
U.S. Cl. 375—76 11 Claims



1. A receiver arrangement for a quadrature phase-shift digital data transmission system comprising:

(A) two quadrature phase detectors,

(B) a local oscillation generator,

(C) means to apply signals from said generator to each of said phase detectors to derive from a phase-shift modulated received signal respective phase detector output signals varying substantially between at least two discrete values in dependence upon data digit values being transmitted over the system,

(D) at least two main threshold detectors arranged respectively to compare said respective phase detector output signals with a main threshold value intermediate two said discrete values during each of a succession of received data digit periods to provide first binary output signals having values dependent upon the results of said main threshold comparisons,

(E) at least one auxiliary threshold detector arranged to compare one of said phase detector output signals with an auxiliary threshold value of substantially one of said two discrete values during said received data digit periods to provide second binary output signals having values dependent upon said auxiliary threshold comparison, and

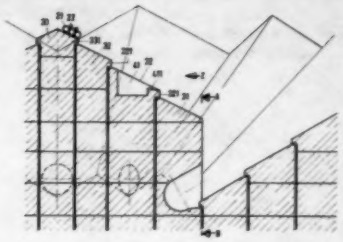
(F) logic circuit means to derive from said first and second binary output signals at least one analogue control signal for said receiver arrangement.

4,383,325
VESSEL OR TANK BOTTOM FOR A PEBBLE-BED REACTOR

Manfred Naujoks, Cologne, and Gerhard Hantel, Munich, both of Fed. Rep. of Germany, assignors to Technik mbH GHT, Gesellschaft für Hochtemperaturreaktor, Bergisch Gladbach, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,330
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942567
Int. Cl.³ G21C 19/28
U.S. Cl. 376—381 4 Claims

1. Vessel bottom for a gas-cooled pebble-bed reactor, comprising a multiplicity of blocks having inclined upper surfaces and being disposed adjacent each other side by side with gaps forming therebetween during operation of the reactor, each immediately adjacent two blocks being in the form of a higher block and a lower block, and projections integral with said higher block of each of said immediately adjacent two blocks extended at least partly over said lower block thereof, said

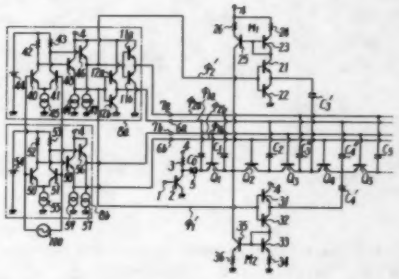


projections being wider than the gaps forming between said adjacent blocks.

4,383,326
CLOCKING SIGNAL DRIVE CIRCUIT FOR BUCKET BRIGADE DEVICE

Takao Tsuchiya; Mitsuo Soneda, both of Fujisawa, and Isa Nakamura, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,111
Claims priority, application Japan, Dec. 3, 1979, 54-156633
Int. Cl.³ G11C 19/20; H03K 19/092
U.S. Cl. 377—61 4 Claims



1. A bucket brigaded device comprising:

a first clocking signal generator for generating as its output a first set of complementary first and second clocking signals of opposite phase;

a second clocking signal generator for generating as its outputs a second set of complementary first and second clocking signals, said first and second clocking signals of said second set having the same frequency and phase as said first and second clocking signals, respectively, of said first set of clocking signals;

a series of successive capacitive storage means for sequentially holding a charge level representing a time sampled input signal, each of said capacitive storage means having a clocking electrode;

a series of transfer gates each including transistor means for controlling the transfer of said charge level between successive ones of said capacitive storage means, each of said transistor means being connected between adjoining capacitive storage means and having a clocking electrode;

first clocking signal drive means for supplying said first and second clocking signals of said first set to said clockin electrodes of adjacent pairs, respectively, of said capacitive storage means; and

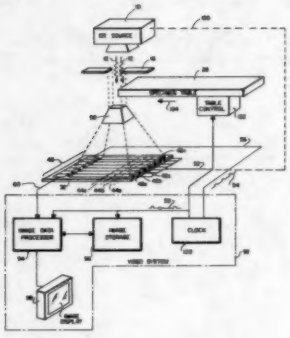
second clocking signal drive means for supplying said first and second clocking signals of said second set to said

clocking electrodes of said transistor means included in adjacent pairs, respectively, of said transfer gates, whereby the levels of said first set of complementary first and second clocking signals can be determined optimally independently of the levels of said second set of complementary first and second clocking signals for increasing the transfer efficiency of said device.

4,383,327
RADIOGRAPHIC SYSTEMS EMPLOYING MULTI-LINEAR ARRAYS OF ELECTRONIC RADIATION DETECTORS

Robert A. Kruger, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Dec. 1, 1980, Ser. No. 211,792
Int. Cl.[3] G01N *23/00*
U.S. Cl. 378—19 22 Claims



1. A radiographic system for generating a radiograph-type image of an opaque specimen comprising:

means for generating a beam of radiation;

an array of sensors aligned with said beam comprising:

a plurality of sensors, each adapted to sense and signal the intensity of any radiation falling thereon,

signal connection means for connecting said sensors of said array in columns, said signal connection means being adapted to allow signals from each of said sensors of a given column to be shifted to an adjacent sensor of said given column in response to a shift control signal, and

data output means for outputting signals from said columns in response to an output control signal;

image display means responsive to said outputted signals from said data output means for producing an image representative of said outputted signals;

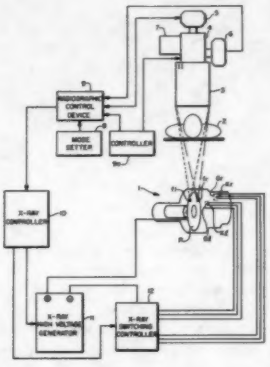
motion means for transversing said beam of radiation with said opaque specimen in a direction that is substantially parallel with said columns of said sensors; and

synchronization means for generating said shift control and output control signals and synchronizing them with the relative motion between said opaque specimen and said beam of radiation, whereby said opaque specimen passes through said beam of radiation at substantially the same rate as said signals of said sensors are shifted along said columns of sensors of said planar array.

4,383,328
X-RAY STEREOSCOPIC CINEMATOGRAPHY APPARATUS

Tetsurou Kurihara, and Kohsaku Nishio, both of Ootawara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kasasaki, Japan

Filed Nov. 17, 1981, Ser. No. 322,287
Claims priority, application Japan, Nov. 20, 1980, 55-163934
Int. Cl.[3] A61B *6/02*
U.S. Cl. 378—042 4 Claims



4. An X-ray stereoscopic cinematography apparatus comprising:

an X-ray tube having at least a pair of focal spots from which X-rays are independently irradiated through an object to create an X-ray image thereof;

means for converting said X-ray image to a corresponding optical image and for transmitting said optical image in an optical path;

an optical system device for selectively distributing said optical image, said optical system device including a half-mirror being positionable in a first position to reflect a portion of the intensity of said optical image and to transmit a portion of the intensity of said optical image and in a second position removed from the path of said optical image, an entire reflection mirror being positionable in an incident light position in said optical path of said optical image to reflect the entire intensity of said optical image in a first direction and a shunt position out of the path of said optical image, and reflector means positioned in said path of said optical image to reflect said optical image in a second direction;

a first cinecamera for photographing said optical image transmitted through said half-mirror of said optical system device;

a second cinecamera for photographing said optical image entering said optical system device or the optical image reflected in said first direction by said half-mirror;

a television camera for receiving said optical image reflected by said reflector or by said entire reflection mirror;

a mode setter for selecting one of a stereoscopic cinematography mode, a single cinematography mode, or a fluoroscopy mode;

a radiographic control device for controlling the positioning of said half-mirror and said entire reflection mirror into and out of said path of said optical image in accordance with said selected mode, for controlling the intensities of the images reflected to said second cinecamera and said television camera responsive to changes in the intensity of light thereupon as a result of the positioning of said half-mirror and said entire reflector mirror, for controlling the photographing of said optical image by said first and

second cinecamera, and for issuing X-ray exposure control switching signals;

a controller for controlling said radiographic control device to position (1) said half-mirror in said first position in response to the selection of said stereoscopic cinematography mode, said half-mirror in said second position to permit said optical image to be directly delivered to said second cinecamera in response to the selection of said single cinematography mode, and said entire reflection mirror in the path of said optical image to reflect said optical image to said television camera in response to the selection of said fluoroscopy mode; and

means for selectively performing on-off control of the X-rays irradiated from each of said focal spots of said X-ray tube responsive to said X-ray exposure control switching signals.

4,383,329

APPARATUS FOR RECORDING DATA ON X-RAY FILMS OR THE LIKE

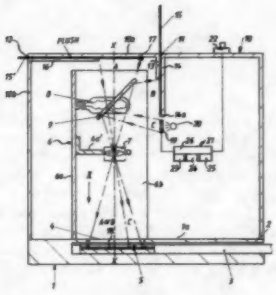
Heinz Kröbel, Taufkirchen; Roland Bruch, Munich; Rolf Eickel, Munich; Jürgen Müller, Munich; Heinrich Färber, Munich, and Günther Bauer, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,996

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946078

Int. Cl.³ H05G *1/28*

U.S. Cl. 378—166 **17 Claims**



1. Apparatus for recording data on radiation-sensitive articles, particularly x-ray film, comprising:

(a) a housing having a supporting element for radiation-sensitive articles, and a pair of receiving elements for primary data carriers having primary data to be recorded on the radiation-sensitive articles, said receiving elements being arranged to support the primary carriers such that the primary data on the same is exposed in the interior of said housing;

(b) an auxiliary data carrier in said housing for auxiliary data to be recorded on the radiation-sensitive articles;

(c) imaging means in said housing for imaging the primary and auxiliary data onto the radiation-sensitive articles, said auxiliary carrier and one of said receiving elements being arranged such that the images of the respective auxiliary and primary data have a first orientation at said supporting element, and the other of said receiving elements being arranged such that the images of the respective primary data have a second orientation at said supporting element which is inverted relative to said first orientation; and

(d) control means for said auxiliary carrier, said control means including an inverting mechanism for the auxiliary data so as to permit the image of the same at said supporting element to assume said second orientation.

4,383,330

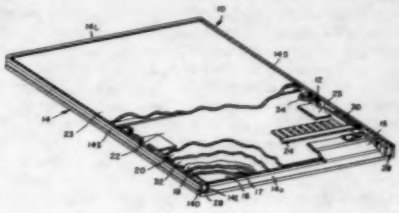
X-RAY CASSETTE HAVING QUICK FILM RELEASE MECHANISM

Charles P. DeFelice, Wilmington, Del., and Donald F. LeRoux, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 28, 1981, Ser. No. 306,389

Int. Cl.³ G03B *17/26*

U.S. Cl. 378—187 **12 Claims**



1. In an x-ray cassette of the type having

a fixed and movable plate;

a film sheet receivable between the plates;

means for biasing the movable plate toward the fixed plate;

bias release means adapted to release the biasing force from the movable plate;

a buckler member having an arm, the buckler member also having a film engaging edge and a cam riding surface;

an actuating cam assembly operatively associated with the bias release means to engage the cam riding surface to thereby displace the buckler member from a retracted position to a film engaging position to bring the film engaging edge of the buckler into edgewise contact with the film to buckle the same from the plate, characterized in that

the film engaging edge of the buckler member extends substantially perpendicular to the plane of the film, the arm is disposed intermediate of the film engaging surface and the cam riding surface, the arm is fabricated of a flexible springy material adapted to bias the buckler head to return it to its retracted position.

4,383,331

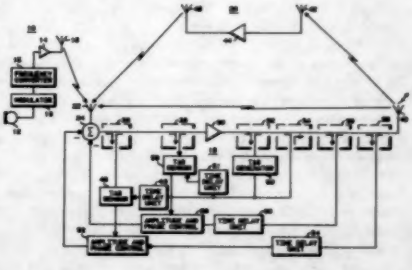
METHOD AND MEANS OF PREVENTING OSCILLATIONS IN A SAME-FREQUENCY REPEATER

Allen L. Davidson, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1981, Ser. No. 279,875

Int. Cl.³ H04B *7/14*

U.S. Cl. 455—24 **6 Claims**



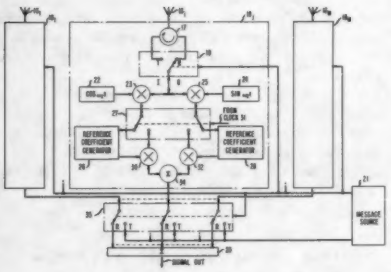
1. A method of minimizing oscillations in a same-frequency repeater comprising the steps of:

a. inserting an identifying tag in a signal to be transmitted from the same-frequency repeater;
b. sensing presence of the tag in a summed signal that includes a signal received by the same-frequency repeater;
c. sampling the signal to be transmitted containing the identifying tag;
d. delaying the sampled signal for a first predetermined time to produce a first delayed sampled signal;
e. varying amplitude and phase of the first delayed sampled signal by a controlled amount;
f. delaying the sampled signal for a second predetermined time to produce a second delayed sampled signal;
g. varying amplitude and phase of the second delayed sampled signal by a second controlled amount;
h. adding the first delayed sampled signal with varied amplitude and phase and the second delayed sampled signal with varied amplitude and phase to the signal received by the same-frequency repeater to produce the summed signal; and
i. controlling the amount of variation of the amplitudes and phases of the first and second delayed sampled signals to produce a minimum amount of tag in the summed signal, whereby signal containing the tag is minimized in the same-frequency repeater and hence oscillations are minimized.

4,383,332
HIGH CAPACITY DIGITAL MOBILE RADIO SYSTEM

Bernard Glance, Colts Neck, and Paul S. Henry, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 21, 1980, Ser. No. 209,146
Int. Cl.³ H04B *7/08, 7/02*
U.S. Cl. 455—33 **13 Claims**



1. A mobile radio base station (**14**) employing space diversity and time-division retransmission comprising:

a plurality of M antenna elements (**16**$_1$, **16**$_2$, . . . , **16**$_M$) for operating in a space diversity mode capable of receiving a mobile-to-base communication signal from a remote station and transmitting a base-to-mobile communication signal to said remote station;

a plurality of M retransmission branches (**18**$_1$, **18**$_2$, . . . , **18**$_M$) associated in a one-to-one relationship with said plurality of M antenna elements and capable of operating in either one of a transmitting mode or a receiving mode, each retransmission branch when operating in its receiving mode being capable of compensating for the incoming random phase associated with said mobile-to-base communication signal and subtracting said random phase therefrom, and when operating in its transmitting mode being capable of adding said random phase to said base-to-mobile communication signal;

combining means (**20**) coupled to the outputs of said plurality of M retransmission branches when operating in their receiving mode and capable of combining said output signals of said branches to form a coherent output signal, and

input means (**21**) capable of applying an input baseband signal to said plurality of retransmission branches when operating in their transmitting mode allowing said plurality of M antenna elements to transmit said base-to-mobile communication signal

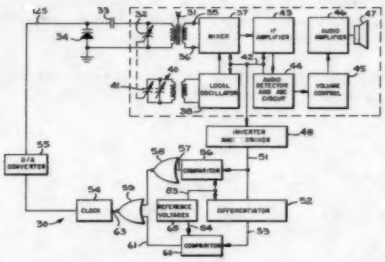
CHARACTERIZED IN THAT

the base station is capable of receiving and transmitting digital communication signals, wherein each retransmission branch includes means (**22,23,24,25,26,28,30,32,34**) capable of both down-converting the mobile-to-base communication signal to a baseband representation thereof and up-converting the input baseband signal to a phased base-to-mobile communication signal.

4,383,333
AM RADIO HAVING AN AUTOMATIC FINE TUNING CIRCUIT

Bert K. Erickson, Fayetteville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,298
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—182 **13 Claims**



1. A circuit for automatically fine tuning a bandpass filter in a receiver which is tunable to an amplitude modulated carrier signal at a frequency within a given relatively wide frequency band and which provides an output signal related to the amplitude modulation superimposed thereon, comprising:

(a) a band-pass filter coarsely tunable within said relatively wide band of frequencies for providing a filtered signal proportionally related to said received amplitude modulated carrier signal said band-pass filter including fine tuning means responsive to an automatic fine tuning signal for approximately centering the pass band of said filter about a selected frequency by adjusting said passband over a relatively narrow band of frequencies within said relatively wide band;

(b) means responsive to the presence of said filtered signal for generating a signal related to said modulation superimposed on said received carrier signal and for generating a first control signal which is related to the magnitude of said filtered signal;

(c) means for deriving a second control signal, the second control signal being related to the derivative with respect to time of the first control signal; and

(d) digital circuit means responsive to the first and second control signals for supplying said band-pass filter fine tuning means with an automatic fine tuning signal.

4,383,334
INTERMODULATION CANCELLING MIXER

Robert L. Epsom, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 12, 1981, Ser. No. 273,143
Int. Cl.³ H04B *1/10, 1/26*
U.S. Cl. 455—295 **4 Claims**

1. A mixer circuit comprising:

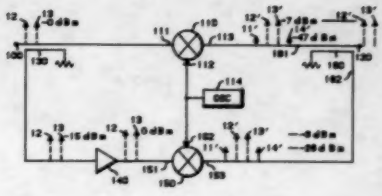
first mixing means, having an input and an output, for mixing

desired and interfering signals within a first selected band of frequency with a signal of predetermined frequency to generate signals within a second selected band of frequencies and intermodulation products;

coupler means for coupling to the input of said first mixing means for attenuating said interfering signals at the output of said coupler means;

second mixing means, operatively coupled to the output of said first coupler means, for mixing the output of said coupler means with a signal of said predetermined frequency to generate signals within said second selected frequency band of frequencies and intermodulation products, and

combining means, having first and second inputs coupled to the outputs of said first mixing means and said second mixing means, respectively, for combining signals respectively generated thereby in a manner which attenuates signals generated by said second mixing means by an amount sufficient to cause intermodulation products generated by said second mixing means to be equal in amplitude to intermodulation products generated by said first



mixing means thereby substantially cancelling such intermodulation products to provide said desired signals.

DESIGN PATENTS

GRANTED MAY 10, 1983

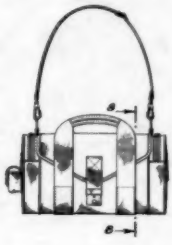
ERRATA

For CLASS	See PATENT NO.
D14–066	268,934

DESIGNS

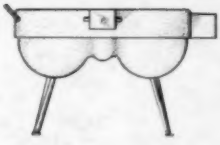
MAY 10, 1983

268,879
CAMERA BAG
Miller Outcalt, 225 Notteargenta, Pacific Palisades, Calif. 90272
Filed Nov. 28, 1980, Ser. No. 211,395
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

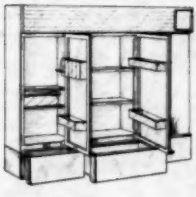


268,880
STAGGERED AIRCRAFT SEATING UNIT
Curtis M. Palmgren, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 20, 1980, Ser. No. 198,333
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48

268,881
CHAIR FOR SEAT BATHS
Jorge C. Aguilera, Lic. Jose Cruz Rodriguez, #24, Col. Jacarandas, 09280 Mexico, D.F., Mexico
Filed Apr. 10, 1981, Ser. No. 252,911
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—58

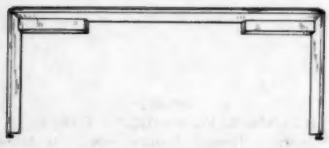


268,882
ILLUMINATED MEDICINE CABINET
Jean Y. Missir, La Tronche, France, assignor to Allibert S.A., Grenoble, France
Filed Oct. 17, 1980, Ser. No. 198,261
Claims priority, application Hague, Apr. 17, 1980, DM/000 150
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—104



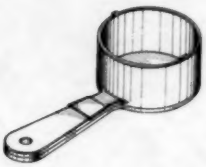
268,883
UTENSIL HOOK FOR APERTURED BOARDS
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., New York, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,015
Term of patent 14 years
Int. Cl. D6—*05;* D8—*08*
U.S. Cl. D6—114

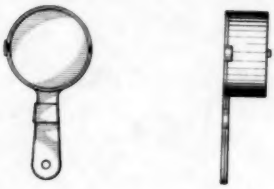
268,884
TABLE OR SIMILAR ARTICLE
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa
Division of Ser. No. 914,285, Jun. 9, 1978. This application Jan. 9, 1981, Ser. No. 223,711
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



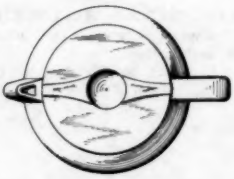
268,885
MEASURING RECEPTACLE WITH RIM HELD REMOVABLE BOTTOM
Shirley J. P. Kelson, 9238 35th Ave. SW., Seattle, Wash. 98126
Filed Feb. 9, 1981, Ser. No. 232,826
Term of patent 14 years
Int. Cl. D07—*04;* D10—*04*
U.S. Cl. D7—50

268,886
MEASURING RECEPTACLE WITH SLIDABLY REMOVABLE BOTTOM
Shirley J. P. Kelson, 9238 - 35th Ave. S.W., Seattle, Wash. 98126
Filed Feb. 9, 1981, Ser. No. 232,827
Term of patent 14 years
Int. Cl. D07—*04;* D10—*04*
U.S. Cl. D7—50

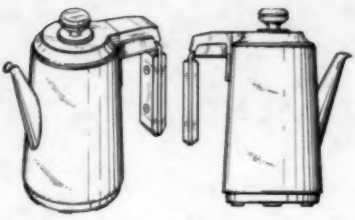




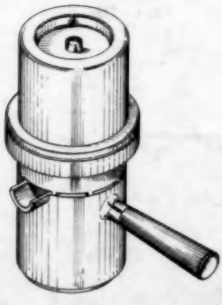
268,887
BEVERAGE DECANTER
Wayne B. Stone, Jr., Bethesda, Md., assignor to Wood Manufacturing Co., Inc., Flippin, Ark.
Filed Jun. 10, 1981, Ser. No. 272,258
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—321



268,888
COFFEEMAKER
Dan E. Gremonprez, West Bend, Wis., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 22, 1981, Ser. No. 276,541
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—321

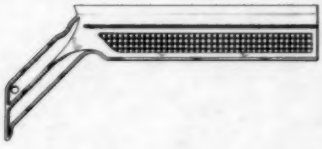


268,889
MICROWAVE ESPRESSO COFFEE MAKER
Robert F. Bowen, Burlington, and Thomas J. Martel, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Aug. 17, 1981, Ser. No. 293,714
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—309



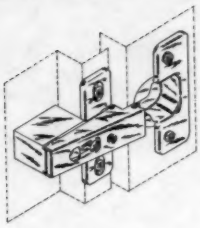
268,890
KITCHEN UTENSIL SUPPORT
Andre Morin, Dollard des Ormeaux, Canada, assignor to Les Industries Provinciales Limitee/Provincial Industries Ltd., Comte Bellechasse, Canada
Filed Mar. 12, 1981, Ser. No. 243,257
Claims priority, application Canada, Jan. 19, 1981, 19018111
Term of patent 14 years
Int. Cl. D07—*06*; D06—*04*
U.S. Cl. D7—73

268,891
COMBINED PAINT STIRRER AND EDGER
Thomas P. Derloshon, Jr., 151 Kensington Park Rd., Greenwood, Ind. 46142
Filed Nov. 28, 1980, Ser. No. 211,197
Term of patent 14 years
Int. Cl. D7—*99*; D8—*05*
U.S. Cl. D7—102

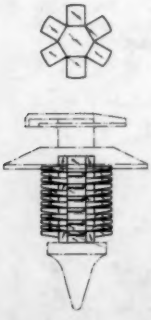


268,892
TIN SMITH TOOL
Michael R. Downing, 6032 Hillcrest Dr., Watauga, Tex. 76148
Filed Oct. 28, 1980, Ser. No. 203,796
Term of patent 14 years
Int. Cl. 8—*05*
U.S. Cl. D8—14

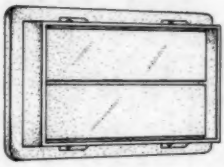
268,893
CABINET HINGE
Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novendrate, Italy
Filed Nov. 13, 1980, Ser. No. 206,618
Claims priority, application Italy, Jul. 3, 1980, 22219/80[U]
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323



268,894
SHANK ELEMENT FOR A DRIVE FASTENER
Burnell U. Wollar, Barrington, Ill., assignor to Phillips Plastics Corp., Phillips, Wis.
Filed Oct. 14, 1980, Ser. No. 196,203
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—385



268,895
ELECTRICAL CABLE ACCESS GROMMET FOR USE IN OFFICE FURNITURE
Vytautas K. Beleckis, East Longmeadow, Mass., assignor to Dennison National Company, Holyoke, Mass.
Filed Mar. 23, 1981, Ser. No. 246,750
Term of patent 14 years
Int. Cl. D8—*99*; D6—*06*
U.S. Cl. D8—400

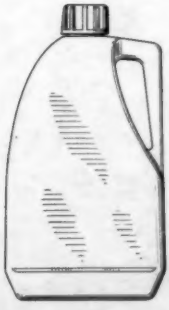


268,896
BOTTLE OR SIMILAR ARTICLE
Larry C. Sledge, Bethel, Conn., assignor to Ethyl Development Corporation, Richmond, Va.
Filed Mar. 3, 1981, Ser. No. 239,995
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—367

268,897
BOTTLE
Doris du Cret, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Jun. 9, 1980, Ser. No. 157,759
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

268,898
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,252
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

268,899
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,262
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



268,900
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,263
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

268,901
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,264
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

268,902
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,254
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

268,903
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,255
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

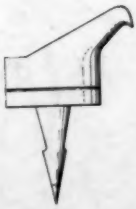
268,904
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,258
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

268,905
COMBINED BOTTLE AND CAP
Livingston C. Douglas, Leonia, N.J., assignor to Colgate Palmolive Company, New York, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,267
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

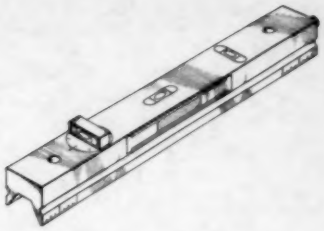
268,906
BOTTLE OR SIMILAR ARTICLE
Larry C. Sledge, Bethel, Conn., assignor to Ethyl Development Corporation, Richmond, Va.
Filed Mar. 3, 1981, Ser. No. 239,996
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—390

268,907
BOTTLE OR SIMILAR ARTICLE
Larry C. Sledge, Bethel, Conn., assignor to Ethyl Development Corporation, Richmond, Va.
Filed Mar. 3, 1981, Ser. No. 239,997
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—390

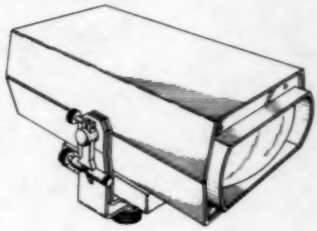
268,908
POURING SPOUT OR SIMILAR ARTICLE
Dino O. Santroni, Sargento Baigorria 2394, Munro, Province of Buenos Aires, Argentina
Filed Nov. 19, 1980, Ser. No. 208,597
Claims priority, application Argentina, May 19, 1980, 39608
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—437



268,909
LEVEL TOOL
Robert L. Doan, 10362 Vic Pl., Garden Grove, Calif. 92642
Filed Aug. 15, 1980, Ser. No. 178,349
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—69



268,910
ELECTRONIC DISTANCE MEASURING INSTRUMENT
John I. Shipp, and Charlie C. Rogers, both of Tullahoma, Tenn., assignors to Benchmark, Tullahoma, Tenn.
Filed May 28, 1980, Ser. No. 154,045
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



268,911
BORE DEPTH AND FACE SQUARENESS GAGE
Robert H. Gordon, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 11, 1981, Ser. No. 262,345
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

268,912
MAGNETIC DECORATIVE ACCESSORY
Roger B. Gushea, 142 Annetta St., Syracuse, N.Y. 13207
Filed Aug. 6, 1981, Ser. No. 290,556
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—141

268,913
FIGURINE OF A RABBIT
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 4, 1980, Ser. No. 184,226
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

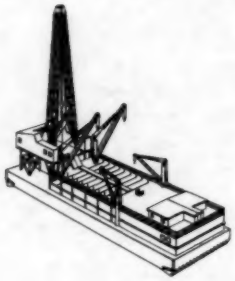
268,914
FIGURINE OF A FOX TERRIER
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,862
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

268,915
FIGURINE OF A BLOODHOUND
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,863
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

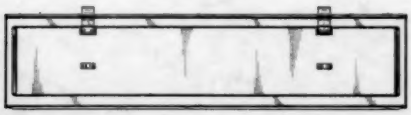
268,916
FIGURINE OF A BLOODHOUND PUP
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,865
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

268,917
FIGURINE OF A DALMATIAN PUP
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Oct. 20, 1980, Ser. No. 198,866
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

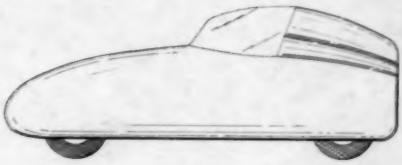
268,918
AIR CUSHION VEHICLE
Daniel G. W. Turner, Romsey, England, assignor to Phoenix Hovercraft Corp., Houston, Tex.
Filed Oct. 16, 1980, Ser. No. 197,428
Claims priority, application United Kingdom, Apr. 19, 1980, 994560
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—5



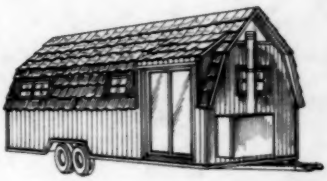
268,919
TRAIN HOPPER COVER
Lewis H. Wiens; James R. Saylor, both of Johnson County, Kans., and Orville E. Blume, Buchanan County, Mo., assignors to Aero Plastics of Kansas City, Inc., Kansas City, Mo.
Filed Jan. 5, 1981, Ser. No. 222,603
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—43



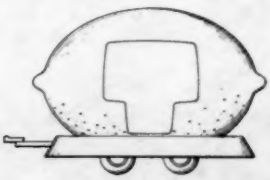
268,920
MOTOR VEHICLE
Thomas A. Bragdon, 890 Hopewell Dr., South Glastonbury, Conn. 06073
Filed Jan. 12, 1981, Ser. No. 224,652
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—86



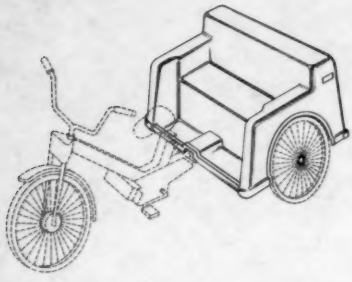
268,921
MOBILE HOME
William P. Marshall, Nappanee, Ind., assignor to Leisure Time Products, Inc., Evergreen, Ala.
Filed Jun. 9, 1980, Ser. No. 157,427
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



268,922
BEVERAGE VENDING BOOTH OR THE LIKE
Robert J. Richer, 4117 N. Colgate Cir., Milwaukee, Wis. 53222
Filed Sep. 30, 1980, Ser. No. 192,446
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105



268,923
SEAT ATTACHMENT FOR TRICYCLES
James A. Mann, 25400 County Rd. 22 East, Elkhart, Ind. 46517
Filed Sep. 19, 1980, Ser. No. 188,961
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



268,924
TIRE VALVE
Harry C. Winther, Quaker Neck Rd., Chestertown, Md. 21620
Filed Nov. 6, 1980, Ser. No. 206,943
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—153

268,925
RETAINER SPRING FOR CAM FOLLOWER IN BRAKE SHOE
William J. Williams, West Bloomfield, Mich., assignor to Rockwell International Corporation
Filed Nov. 3, 1980, Ser. No. 203,203
Term of patent 14 years
Int. Cl. D12—*16*; D8—*08*
U.S. Cl. D12—180

268,926
INSULATING CAP FOR A SHIELDING WIRE
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1979, Ser. No. 108,126
Claims priority, application Japan, Aug. 29, 1979, 54-36032
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—17

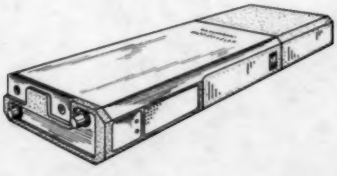
268,927
PUSH BUTTON SWITCH
Shigeo Ohashi, c/o Nihon Kaiheiki Kogyo Kabushiki Kaisha, 5-14 Minamimagome 1-chome, Ohta-ku, Tokyo, Japan
Filed May 14, 1981, Ser. No. 263,619
Claims priority, application Japan, Dec. 27, 1980, 55-55402
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38

268,928
PUSH BUTTON SWITCH
Shigeo Ohashi, c/o Nihon Kaiheiki Kogyo Kabushiki Kaisha, 5-14 Minamimagome 1-chome, Ohta-ku, Tokyo, Japan
Filed May 14, 1981, Ser. No. 263,621
Claims priority, application Japan, Dec. 27, 1980, 55-55403
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38

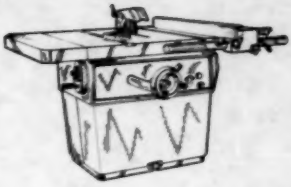
268,929
COMBINED TAPE DECK, PHONOGRAPH, TUNER AND AMPLIFIER
Takeshi Tsuruta; Takao Oura, and Hideki Okada, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 27, 1981, Ser. No. 228,807
Claims priority, application Japan, Aug. 20, 1980, 55-34028
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

268,930
TELEVISION IMAGE PROJECTOR
David P. Frahn, 26450 Gene St., Hemet, Calif. 92340
Filed Jan. 9, 1981, Ser. No. 223,571
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—84

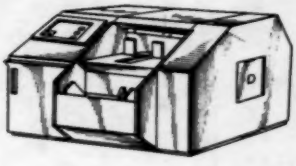
268,931
KEYLOADER MODULE FOR ENCRYPTION SYSTEMS OR SIMILAR ARTICLE
Robert W. Ellis, Apache Junction, and Joseph W. Karas, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed Apr. 2, 1979, Ser. No. 25,953
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



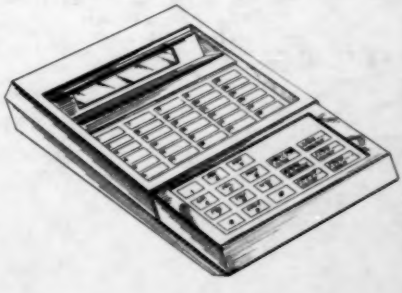
268,932
CIRCULAR SAW
Peter Lawson, Sao Paulo, Brazil, assignor to Rockwell do Brasil Industria E. Comercio Ltda., Brazil
Filed Nov. 19, 1979, Ser. No. 95,858
Claims priority, application Brazil, May 21, 1979, MI3900356
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—133



268,933
CAMERA FOR MICROFILM
Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 3, 1980, Ser. No. 109,280
Claims priority, application Japan, Jul. 5, 1979, 54-28133
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



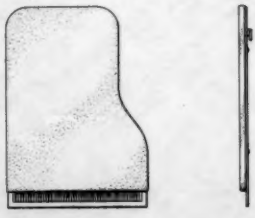
268,934
TELEPHONE CONTROLLER OR SIMILAR ARTICLE
Robert W. Walton, Thornhill, Canada, assignor to Dictograph Manufacturing Corp., Thornhill, Canada
Filed Jan. 21, 1981, Ser. No. 226,976
Term of patent 14 years
Int. Cl. D14—*03;* D18—*01*
U.S. Cl. D14—66



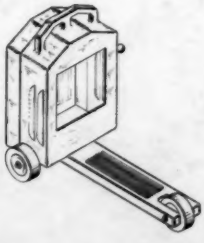
268,935
MARKING INSTRUMENT
Günter Horntrich, Pforzheim, Fed. Rep. of Germany, assignor to Messrs. Kreuzer-Werk GmbH, Bonn-Duisdorf, Fed. Rep. of Germany
Filed Apr. 13, 1981, Ser. No. 253,362
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, MR 1872
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43

268,937
GAMEBOARD
Kenneth A. Roddy, 15322 E. Ritter Cir., Houston, Tex. 77071
Filed Nov. 10, 1980, Ser. No. 205,890
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—30

268,936
PIANO SHAPED BULLETIN BOARD
Robert Berinson, 203 Leighton Ave., Silver Spring, Md. 20901
Filed May 11, 1981, Ser. No. 262,627
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—52

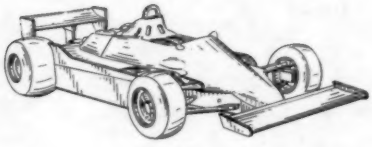


268,938
SCOOTER
Ernest D. Carmagnola, 2740 Len Dr., Bellmore, N.Y. 11710, and Peter Natale, 400 Oakland Ave., Deer Park, N.Y. 11729
Filed Oct. 22, 1979, Ser. No. 69,287
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—80



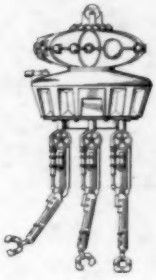
268,939
TOY BUZZ SAW
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Apr. 13, 1981, Ser. No. 253,240
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—120

268,940
MODEL RACING CAR
Patrick M. C. Head, Tirrold, England, assignor to Williams Grand Prix Engineering Limited, Didcot, England
Filed Aug. 25, 1981, Ser. No. 296,116
Claims priority, application United Kingdom, Mar. 4, 1981, 999220
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



268,941
TOY FIGURE
George W. Lucas, Jr., San Rafael, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Feb. 5, 1981, Ser. No. 231,673
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

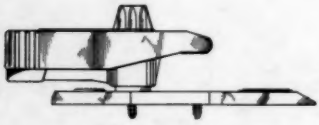
268,942
TOY FIGURE
George W. Lucas, Jr., San Rafael, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Feb. 5, 1981, Ser. No. 231,732
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



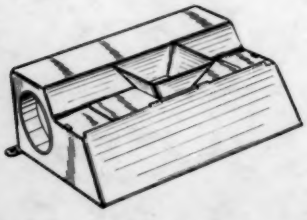
268,943
GOLF CLUB COVER
Edward Miller, 1428 Sleepy Hollow La., Paradise, Calif. 95969
Filed May 29, 1981, Ser. No. 268,265
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—221

268,944
GOLF GRIP
Robert G. Southey, Laurinburg, N.C., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 20, 1981, Ser. No. 245,832
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222

268,945
TOE UNIT OF A SKI SAFETY BINDING
Jean J. A. Beyl, Nevers, France, assignor to Look, Nevers, France
Filed Feb. 1, 1980, Ser. No. 117,447
Claims priority, application France, Aug. 7, 1979, 124
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



268,946
RODENT BAIT STATION CONTAINER OR THE LIKE
Daniel A. Sherman, 76 Ninth Ave., New York, N.Y. 10011
Filed Dec. 22, 1980, Ser. No. 218,981
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18

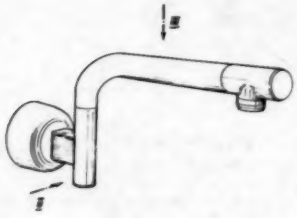


268,947
TENSIONING CAP FOR A BAG FILTER
Jack T. Clements, Raytown, Mo., assignor to Standard Havens, Inc., Kansas City, Mo.
Filed Nov. 24, 1980, Ser. No. 209,858
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

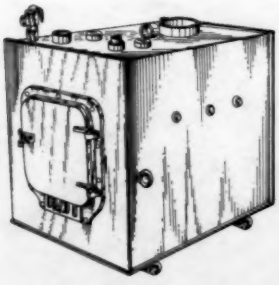
268,948
HOSE NOZZLE
Craig R. Tisserat, 6374 Amber Wood Dr., Alta Loma, Calif. 91701; Enric C. Mendoza, 356 N. Vista Del Norte, Walnut, Calif. 91789; Marnie C. Averitt, 6227 Coral Ridge Rd., Houston, Tex. 77069, and Humbert Olivari, #129, 7200 Shady Villa La., Houston, Tex. 77055
Division of Ser. No. 133,956, Mar. 25, 1980. This application Dec. 29, 1980, Ser. No. 221,039
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

268,949
SPOUT
Jean C. Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Nov. 17, 1980, Ser. No. 207,608
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

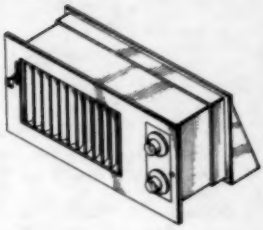
268,950
WALL SPOUT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,536
Claims priority, application Australia, Jan. 5, 1981, 82983
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



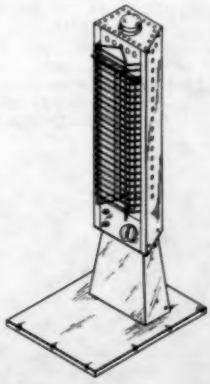
268,951
WOOD BURNING WATER HEATER
Robert G. Ulmer, 182 Kready Ave., Millersville, Pa. 17551
Filed Sep. 26, 1979, Ser. No. 84,969
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86



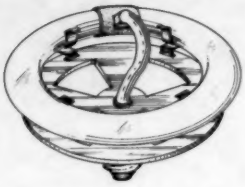
268,952
COMBINED FRESH AIR MAKE-UP AND TEMPERATURE CONTROL UNIT
Leroy E. Anderson, Detroit Lakes, Minn., assignor to Standex International Corporation, Salem, N.H.
Filed Nov. 26, 1980, Ser. No. 210,268
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—111



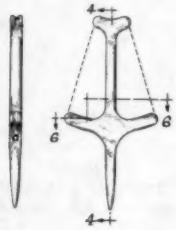
268,953
UPRIGHT PORTABLE ELECTRIC HEATER
Charles F. Kerchner, Jr., R.D. 3, Box 174A, Northampton, Pa. 18067
Filed Aug. 7, 1980, Ser. No. 176,128
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



268,954
CIRCULAR FLUORESCENT LAMP
William J. Roche, Merrimac, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Apr. 20, 1981, Ser. No. 255,616
Term of patent 14 years
Int. Cl. D26—*04, 05*
U.S. Cl. D26—3

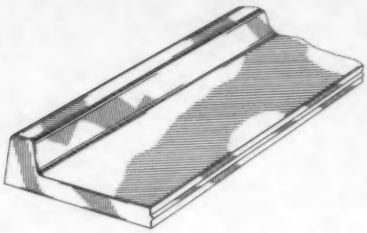


268,955
DENTAL FLOSS HOLDER
James M. Givens, 4929 Collwood Blvd., C5, San Diego, Calif. 92115
Filed Jun. 7, 1982, Ser. No. 386,165
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D28—64

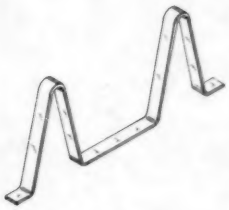


268,956
COMBINED CARTRIDGE HOLDER AND NOZZLE ASSEMBLY
Paul E. DuFresne, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 3, 1980, Ser. No. 203,055
Term of patent 14 years
Int. Cl. D29—*01;* D23—*01*
U.S. Cl. D29—5

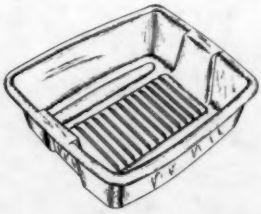
268,957
INTERLOCKING CURB PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Mar. 26, 1982, Ser. No. 362,092
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



268,958
SURGICAL RESTRAINER FOR SMALL ANIMALS
Richard L. Lange, and Randall L. Lange, both of Knoxville, Tenn., assignors to Mark Anderson, Elmwood, Wis.
Filed Nov. 24, 1980, Ser. No. 209,677
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—33

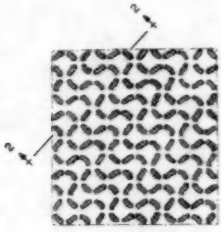


268,959
DISH PAN
Gary J. Troy, Leominster, Mass., assignor to Cosco, Inc. (Tucker Housewares Div.), Columbus, Ind.
Filed Jun. 3, 1981, Ser. No. 270,002
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—55



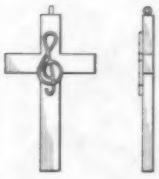
268,960
CART
Richard S. Havlick, Gloversville, N.Y., assignor to N. A. Taylor Co., Inc., Gloversville, N.Y.
Filed Dec. 17, 1980, Ser. No. 217,257
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26

268,961
EMBOSSED WEB MATERIAL FOR PAPER TOWELING OR THE LIKE
M. Dallas Erickson, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 9, 1981, Ser. No. 232,705
Term of patent 14 years
Int. Cl. D05—*06*
U.S. Cl. D59—2 B



268,962
THERMOPLASTIC FILM STOCK
James M. Adams, and Garland E. Raley, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.
Continuation of Ser. No. 881,872, Feb. 27, 1978. This application Jun. 4, 1981, Ser. No. 270,412
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1.1

268,963
PENDANT OR THE LIKE
Ann H. Wiman, 2419 King Arthur Cir.,NE., Atlanta, Ga. 30345
Filed Feb. 18, 1981, Ser. No. 235,685
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D99—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF MAY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.N.V.A.R.: *See*—
Lemaitre, Gerard R., 4,382,657, Cl. 350-295.000.

AB Carbox: *See*—
Pettersson, Bjorn O. A., 4,382,373, Cl. 72-57.000.

Abblard, Jean; Gaulliard, Jean-Michel; and Lacroix, Guy, to Rhone-Poulenc Agrochimie. Fungicidal compositions. 4,382,928, Cl. 424-211.000.

Abbott Laboratories: *See*—
Bujan, Albert F.; and Pluta, Paul L., 4,382,453, Cl. 138-40.000.

Abe, Norio: *See*—
Sato, Yo; Abe, Norio; Kikuchi, Suguru; Goto, Fumio; and Sugimoto, Akira, 4,382,835, Cl. 156-384.000.

Abel, Donald, to Morton Glass Works. Sewing machine storage cabinet. 4,382,641, Cl. 312-21.000.

Abel, Michael L.; and Yates, Thomas P., to Northern Petrochemical Company. Antifreeze corrosion inhibitor composition for aluminum engines. 4,382,870, Cl. 252-75.000.

Abel, Peter T., to SCM Corporation. Thermosetting acrylic polyvinylidene fluorine composition. 4,383,075, Cl. 524-512.000.

ACF Industries, Incorporated: *See*—
Dugge, Richard H., 4,382,725, Cl. 406-131.000.

Acheson Industries, Inc.: *See*—
Stoetzer, Steven R.; and Wiley, Robert E., 4,382,981, Cl. 427-105.000.

Acker, Jan R.: *See*—
Shaffer, Robert W.; and Acker, Jan R., 4,382,754, Cl. 418-55.000.

Acme Electric Corporation: *See*—
Randall, Ronald H., 4,383,293, Cl. 363-25.000.

Adachi, Takashi: *See*—
Tamai, Masahuru; Adachi, Takashi; Morimoto, Shigeo; Oguma, Ikyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,382,889, Cl. 260-112.50R.

Adams, Charles E.: *See*—
Gafford, Alexander T.; and Adams, Charles E., 4,382,528, Cl. 222-367.000.

Adams, Don L.: *See*—
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,383,299, Cl. 364-434.000.

Adeboi, Frans L.; and Freeman, James G., to Meyer Dairy Products Company, The. Liquid filter. 4,382,861, Cl. 210-497.200.

Advanced Energy Systems Inc.: *See*—
Anderson, David H.; Babbage, Thomas F.; and Lucas, Eugene F., 4,382,484, Cl. 180-165.000.

Aero Power Engine Manufacturing, Inc.: *See*—
Lyndhurst, Francis R., 4,382,427, Cl. 123-41.740.

Afonso, Adriano, to Schering Corporation. 2-(Amino acid-thio)-1-carbapen-2-em-3-carboxylic acids and congeners. 4,382,949, Cl. 424-274.000.

Agency of Industrial Science and Technology: *See*—
Shiraishi, Masao, 4,382,466, Cl. 165-104.110.

Ageta, Kosei: *See*—
Takaoka, Nobuo; and Ageta, Kosei, 4,382,329, Cl. 29-726.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; Helling, Guenter; and Strauss, Jurgen, 4,383,021, Cl. 430-213.000.
Krobel, Heinz; Bruch, Roland; Eickel, Rolf; Muller, Jurgen; Farber, Heinrich; and Bauer, Gunther, 4,383,329, Cl. 378-166.000.
Neudecker, Karl, 4,382,663, Cl. 353-104.000.
Simm, Walter, 4,383,019, Cl. 430-45.000.

Aigo, Masayoshi: *See*—
Kawase, Nobuo; and Aigo, Masayoshi, 4,382,776, Cl. 432-9.000.

Aikawa, Chuta; Sanada, Noriyoshi; Murakami, Mitsuyoshi; Kikuchi, Junzo; and Kuroda, Masaki, to Tamura Electric Works, Ltd. Key telephone system with multiple processor control. 4,383,137, Cl. 179-18.0ES.

Air Products and Chemicals, Inc.: *See*—
Gaumer, Lee S., 4,382,366, Cl. 62-31.000.

Airway Industries, Inc.: *See*—
Philips, Gary, 4,383,143, Cl. 190-53.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ishikawa, Yoshiaki, 4,382,622, Cl. 292-216.000.
Satomoto, Atsushi, 4,382,546, Cl. 236-48.00R.
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,383,231, Cl. 335-146.000.

Ajinomoto Company Incorporated: *See*—
Murao, Sawao; and Fukuhara, Kenichi, 4,382,888, Cl. 260-112.50R.

Akesson, Arne; and Reitberger, Torbjorn. Method of manufacturing bonded products of cellulose or cellulose derivatives. 4,382,847, Cl. 204-159.120.

Akiba, Shigeyuki: *See*—
Sakai, Kazuo; Matsushima, Yuichi; Akiba, Shigeyuki; and Yamamoto, Takaya, 4,383,266, Cl. 357-13.000.

Akira, Yamano: *See*—
Hirofumi, Shimizu; Akira, Yamano; and Shinzo, Ikeuchi, 4,383,017, Cl. 430-7.000.

Akita, Shinji; and Morita, Minoru, to Nippon Kokan Kabushiki Kaisha. Walking beam. 4,382,503, Cl. 198-774.000.

Akro Corporation, The: *See*—
Reuben, Harold, 4,382,986, Cl. 428-88.000.

A.G. (Patents) Limited: *See*—
Fricker, Richard, 4,383,040, Cl. 435-161.000.

Akutagawa Confectionery Co., Ltd.: *See*—
Akutagawa, Tokuji, 4,382,968, Cl. 426-249.000.

Akutagawa, Tokuji, to Akutagawa Confectionery Co., Ltd. Process for molding chocolate to make chocolate block having ornamental pattern. 4,382,968, Cl. 426-249.000.

Albert, Marcel; Fortin, Joseph; and Parenteau, Robert, to Ets Albert S.A. Machine for fraying woven fabrics. 4,382,321, Cl. 28-145.000.

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Gailey, J. Lynn; and Wollam, Carl A., 4,382,354, Cl. 52-521.000.

Alcon Pharmaceuticals Limited: *See*—
Feurer, Bernard, 4,382,902, Cl. 264-1.400.

Aleff, Hans P., to Cia. Vinicola del Vergel, S.A. Flow control structures. 4,382,520, Cl. 215-21.000.

Allard, Frederic P., to Rowland, Incorporated. Tools for optical lenses. 4,382,803, Cl. 51-298.000.

Allen, Anthony L.: *See*—
de Buda, Eric G.; and Allen, Anthony L., 4,382,383, Cl. 73-592.000.

Allenbach, Udo: *See*—
Buttner, Gerhard; Judat, Artur; Allenbach, Udo; and Lenthe, Manfred, 4,383,126, Cl. 568-650.000.

Allied Corporation: *See*—
Boden, David P., 4,382,883, Cl. 252-521.000.
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,382,840, Cl. 156-623.00R.
Chang, Irving B.; and Beckwith, Robert E., Jr., 4,382,989, Cl. 428-280.000.
Van Der Puy, Michael; and Piskorz, Ronald F., 4,383,128, Cl. 570-165.000.

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Gafford, Alexander T.; and Adams, Charles E., 4,382,528, Cl. 222-367.000.
Haupt, Robert C., 4,382,613, Cl. 280-756.000.

Alonso, Richard J.; Nersesian, Ara; Cotty, Val F.; and Henry, S. Mark, to Bristol-Myers Company. Composition for treatment and prevention of malodorous generating skin conditions. 4,382,919, Cl. 424-65.000.

Alpha Solarco Inc.: *See*—
Uroshevich, Miroslav, 4,383,130, Cl. 136-261.000.

Alps Electric Co., Ltd.: *See*—
Kondo, Shiro; and Kumagai, Masao, 4,383,153, Cl. 200-153.00J.

Alten, Kurt. Transfer bridge. 4,382,307, Cl. 14-71.700.

Altenau, Alan G.: *See*—
Lawson, David F.; Hayes, Robert A.; and Altenau, Alan G., 4,383,071, Cl. 524-432.000.

Altissimo, Mario, to Hogar S.r.l. Automatic apparatus for cleaning dogs and similar animals. 4,382,424, Cl. 119-158.000.

Altus Corporation: *See*—
Driscoll, Joseph R., 4,383,012, Cl. 429-101.000.

Alvarez, Donald E. Portable coffee maker. 4,382,402, Cl. 99-295.000.

Ambros, Rainer; and Paffrath, Gottfried, to Rheinisch-Westfalisches Elektrizitatswerk AG. Method of and an apparatus for the evaluation of burned-out nuclear fuel elements. 4,382,906, Cl. 376-247.000.

Ambrosini, Leonard R., to United States of America, Army. Self aligning expansible sabot projectile for worn gun tubes. 4,382,411, Cl. 102-523.000.

Amchem Products, Inc.: *See*—
McCready, Newton W., 4,382,825, Cl. 134-2.000.

American District Telegraph Company: *See*—
Galvin, Aaron A., 4,383,250, Cl. 340-521.000.

American Monitor Corporation: *See*—
Denney, Jerry W.; and Long, Robert L., 4,383,043, Cl. 436-74.000.

American Precision Industries Inc.: *See*—
Garrison, Maurice R.; and Stachura, Victor J., 4,382,467, Cl. 165-159.000.

American Sterilizer Company: *See*—
Halleck, Frank E., 4,382,824, Cl. 134-1.000.

American Western Industries, Inc.: *See*—
Robbins, Roberta; and Henson, William E., 4,382,508, Cl. 206-216.000.

Amerine, James D.: *See*—
Lubsen, Timothy A.; and Amerine, James D., 4,382,552, Cl. 239-317.000.

AMF Incorporated: *See*—
Richert, Walter J., 4,383,232, Cl. 335-202.000.
AMP Incorporated: *See*—
Herrmann, Henry O., Jr., 4,382,650, Cl. 339-60.00R.
Analog Devices, Incorporated: *See*—
Morong, William H., III, 4,383,222, Cl. 330-9.000.
Anan, Tsunetoshi: *See*—
Mizuyama, Akinori; Ogita, Tadahisa; Okazaki, Shinichi; and Anan, Tsunetoshi, 4,383,191, Cl. 310-59.000.
Ancos Co., Ltd.: *See*—
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,382,706, Cl. 401-67.000.
Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc. Felt tip writing pen. 4,382,707, Cl. 401-198.000.
Andersen, Knud T.; and Christensen, Erik C. P., to F. L. Smidth & Co. Vertical roller mill. 4,382,561, Cl. 241-121.000.
Anderson, Birger O.; and Wagner, David L., to Boeing Company, The. Workpiece retaining pressure-foot assembly for orthogonally movable machine tool. 4,382,728, Cl. 409-137.000.
Anderson, Carl. Pump jack poles. 4,382,488, Cl. 182-136.000.
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Anderson, Douglas F. Device for feeling audio amplifier output. 4,382,793, Cl. 434-112.000.
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Pflugfelder, Karl, 4,382,532, Cl. 224-331.000.
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Lowe, Earl L., 4,382,451, Cl. 137-596.160.
Wood, Charles L., 4,382,810, Cl. 65-29.000.
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Barkow, William H., to RCA Corporation. Television deflection yoke. 4,383,233, Cl. 335-213.000.
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Barr, John D., to Drilling & Service U.K. Limited. Rotary drill bits. 4,382,477, Cl. 175-410.000.
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Neil, Iain A.; McLean, Gordon H.; and Berry, Peter J., 4,383,173, Cl. 250-330.000.
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Bartok, Joseph. Wood splitting maul. 4,382,459, Cl. 145-2.00R.

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Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,382,933, Cl. 424-248.400.
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Meyborg, Holger; Wagner, Kuno; Barnes, James M.; and Salzburg, Herbert, 4,383,051, Cl. 521-176.000.
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BBC Brown, Boveri & Company, Limited: *See*—
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Beecher, Brazier K., to Voss Steel Corporation. Method of preparing hydrochloric acid and high purity ferrous sulfate hydrate crystals from hydrochloric acid waste pickle liquor. 4,382,916, Cl. 423-481.000.
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Beinke, Hans C.; and Cuca, Robert C., to K-V Pharmaceutical Company. Fire starters. 4,382,802, Cl. 44-51.000.
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Bell, Christy W.; Titus, Charles H.; and Pogontchef, Robert Y., to Electro-Petroleum, Inc. Method for drying drilling mud. 4,382,341, Cl. 34-1.000.
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Hall, Thomas M., 4,383,026, Cl. 430-325.000.
Netravali, Arun N.; and Robbins, John D., 4,383,272, Cl. 358-136.000.
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Seidel, Harold, 4,383,316, Cl. 370-118.000.
Timor, Uzi, 4,383,323, Cl. 375-1.000.
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Ben-Tal, Ram. Slats for assembly into door or window shutters. 4,382,460, Cl. 160-236.000.
Bendick, Robert L. Device for locating suspension hook. 4,382,337, Cl. 33-180.00R.
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Bentvelsen, Petrus A. C.; Kreuger, Frederik H.; and Monteny, Marinus K., to N.K.F. Kabel B.V. Electric high voltage cable. 4,383,132, Cl. 174-120.0SC.
Beran, Mark A.; and Colglazier, Donald F., to International Business Machines Corporation. Vacuum document feeder. 4,382,593, Cl. 271-12.000.
Beresinsky, Isaac, to Moledeth Development Company Ltd. Elevator-conveyor for bulk material. 4,382,502, Cl. 198-628.000.
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Berger, Michael, to Polaroid Corporation. Diffusion transfer film unit with protective layer of water soluble copper salt, chitosan and gelatin. 4,383,022, Cl. 430-228.000.
Berghofer, Theodor. Drawing and coloring element in form of blackboard-chalk-like stick for producing pictures that can be fixed through application of heat. 4,382,819, Cl. 106-19.000.
Bergthaller, Peter; Helling, Guenter; and Strauss, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Image-receiving element for the dye diffusion transfer process with metal complex of diazabicyclooctane. 4,383,021, Cl. 430-213.000.
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Berling, Kenneth G.; and Crosby, Thomas G., to Procter & Gamble Company, The. Palatable composition containing oil or oil-like materials. 4,382,924, Cl. 424-180.000.
Bernardi, Luigi; Bosisio, Germano; Mantegani, Sergio; Rossi, Alessandro; and Temperilli, Aldemio, to Farmitalia Carlo Erba S.p.A. Ercoline derivatives and therapeutic compositions having CNS affecting activity. 4,382,940, Cl. 424-261.000.
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Binder, Helmut; Haar, Gerhard; Schmid, Eckhardt; and Wirth, Hans-Joachim, to ITT Industries Inc. Signal lamp. 4,383,290, Cl. 362-290.000.
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Birkle, Siegfried; and Stoeger, Klaus, to Siemens Aktiengesellschaft. Method for heating aluminum baths. 4,382,844, Cl. 204-14.00N.
Bisk, Leonard; and Rogahn, Gunther, to Independent Products Company, Inc. Hanger with swivel hook and skirt and trouser clips. 4,382,531, Cl. 223-91.000.
Black, Cline, to Simulation Sciences, Inc. Method for producing gasoline-alcohol fuels. 4,382,843, Cl. 203-19.000.
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Black, Kenneth C. Straight edge device. 4,382,340, Cl. 33-413.000.
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Blanchard, Linden O., to Avco Corporation. Connector. 4,382,653, Cl. 339-143.00R.
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Bloem, Russell J.; Bunge, Richard H.; and French, James C., to Warner-Lambert Company. Antibiotic roridin L-2 and its use. 4,382,952, Cl. 424-279.000.
Blount, David H. Process for the production of polyester silicate resinous products. 4,383,049, Cl. 521-135.000.
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Boots, Byron R., to Boots, Lorin W. Photographic chemistry. 4,383,028, Cl. 430-483.000.

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Botez, Dan; and Butler, Jerome K., to RCA Corporation. Positive index lateral waveguide semiconductor laser. 4,383,320, Cl. 372-45.000.

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Bouchard, Andre C., to GTE Products Corporation. Miniature photoflash lamp and method of making. 4,382,775, Cl. 431-362.000.

Bouldin, Eric W., to Drexler Technology Corporation. Method of making a highly absorptive dye-containing underlayer for laser recording and data storage. 4,383,024, Cl. 430-271.000.

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Bowley, Wallace W. Underwater power generator. 4,383,182, Cl. 290-43.000.

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Boyes, Michael, to Stelrad Group Limited. Seat exchanger. 4,382,425, Cl. 122-367.00R.

Boykin, Richard C., to Xerox Corporation. Illumination arrangement for elimination of gray borders in copying device. 4,382,672, Cl. 355-1.000.

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Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, 4,382,944, Cl. 424-269.000.
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Brandl, Michael C.; Holm, Charles H.; and Kataoka, David T., to International Harvester Co. Secondary hood latch. 4,382,482, Cl. 180-69.00R.

Brandon, George M., to Textron Inc. Light flicker eliminating circuit. 4,383,201, Cl. 315-078.000.

Brandt, Dieter, to August Merckens Nachfolger Kommanditgesellschaft. Thixotropic coating agents based on urea adduct of polyamine and monoisocyanate. 4,383,068, Cl. 524-196.000.

Brandt, Siegfried: *See*—
Ucinhazska, Bruno; Disteldorf, Josef; Hubel, Werner; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,382,555, Cl. 239-714.000.

Brassat, Bert: *See*—
Nielinger, Werner; Brassat, Bert; Binsack, Rudolf; and Neuray, Dieter, 4,383,083, Cl. 525-183.000.

Brasseries Kronenbourg S.A.: *See*—
Hamelin, Benoit; and Constant, Brigitte, 4,382,511, Cl. 206-427.000.

Brauer, Hans; and Demny, Werner, to Friedrich Kocks GmbH & Co. Methods of rolling wire rods or bars. 4,382,376, Cl. 72-205.000.

Braumuller, Robert C.: *See*—
Hess, John E., II; and Braumuller, Robert C., 4,383,288, Cl. 362-32.000.

Braun Aktiengesellschaft: *See*—
Tittert, Curt, 4,382,448, Cl. 132-33.00R.

Bray, Muriel E.: *See*—
Fredericks, Victor L.; and Bray, Muriel E., 4,382,567, Cl. 244-107.000.

Bregovic, Josip; and Valic, Josip. Shut-off valve for liquid or gaseous fluids. 4,382,577, Cl. 251-43.000.

Brewer, Robert J., to U.S. Philips Corporation. Switchable analog signal inverter. 4,383,185, Cl. 307-108.000.

Bridgestone Tire Co., Ltd.: *See*—
Fujimaki, Tatsuo; Yamaguchi, Shinsuke; Yamada, Tomoharu; and Tomita, Seisuke, 4,383,085, Cl. 525-196.000.

Briefer, Dennis K.: *See*—
Lee, Shih-Ying; and Briefer, Dennis K., 4,382,479, Cl. 177-189.000.

Brill-Edwards, Kenneth O. P., to Cresent Roofing Company Limited. Roofing panels. 4,382,435, Cl. 126-429.000.

Bristol-Myers Company: *See*—
Alonso, Richard J.; Nersesian, Ara; Cotty, Val F.; and Henry, S. Mark, 4,382,919, Cl. 424-65.000.

Bristol S.A.: *See*—
Sanvido, Sergio, 4,382,372, Cl. 70-355.000.

British Petroleum Company Limited, The: *See*—
Thomas, Mark E., 4,382,901, Cl. 261-114.00A.

Brivio, Attilio: *See*—
Brivio, Onorato; and Brivio, Attilio, 4,382,644, Cl. 312-334.000.

Brivio Industria Mobili di Brivio Onorato e Attilio S.d.f.: *See*—
Brivio, Onorato; and Brivio, Attilio, 4,382,644, Cl. 312-334.000.

Brivio, Onorato; and Brivio, Attilio, to Brivio Industria Mobili di Brivio Onorato e Attilio S.d.f. Bearing device for sliding panels, particularly for a piece of furniture. 4,382,644, Cl. 312-334.000.

Brook, Basil W.; and Reeder, Frank, to International Paint Company Limited, The. Water dilutable epoxy coating compositions. 4,383,059, Cl. 523-412.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Kurachi, Hisao; Itoh, Takeo; Onoda, Hiroshi; Okado, Kiyomichi; and Kuzuya, Susumu, 4,382,705, Cl. 400-697.100.

Brower, Boyd G., to GTE Products Corporation. Spark gap switch. 4,382,774, Cl. 431-359.000.

Brower, Ronald W.: *See*—
Romano-Moran, Roberto; and Brower, Ronald W., 4,382,827, Cl. 148-1.500.

Brown, Donald G., to Rockwell International Corporation. On-axis flex web gimbal. 4,382,709, Cl. 403-57.000.

Brown, Trevor J.; and Hakken, Neal S., to General Motors Corporation. Plastic vehicle wheel cover. 4,382,635, Cl. 301-37.0TP.

Bruch, Roland: *See*—
Krobel, Heinz; Bruch, Roland; Eickel, Rolf; Muller, Jurgen; Farber, Heinrich; and Bauer, Gunther, 4,383,329, Cl. 378-166.000.

Brunswick Corporation: *See*—
Neufeld, Henry L., 4,382,562, Cl. 242-84.20A.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, 4,382,944, Cl. 424-269.000.

Buchs, Wolfgang; and Staedtler, Rolf, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Load transmitting connecting element with bolt eyes. 4,382,712, Cl. 403-405.000.

Bucyrus-Erie Company: *See*—
Dummer, Robert E., 4,382,360, Cl. 60-444.000.

Budnowski, Manfred: *See*—
Moller, Hinrich; Osberghaus, Rainer; and Budnowski, Manfred, 4,382,765, Cl. 424-365.000.

Buechel, Franz; and Jochum, Peter, to Hilti Aktiengesellschaft. Explosive powder operated setting device. 4,382,533, Cl. 227-10.000.

Buehler, Ernest: *See*—
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,382,840, Cl. 156-623.00R.

Bujan, Albert F.; and Pluta, Paul L., to Abbott Laboratories. Flow ristrictor for flexible tubing. 4,382,453, Cl. 138-40.000.

Bulgarsko Radio: *See*—
Kanchev, Peter K., 4,383,139, Cl. 179-111.00R.

Bunemann, Hermann: *See*—
Fischer, Horst; Bunemann, Hermann; Henneken, Bernhard; and Kammerling, Bruno, 4,382,585, Cl. 266-190.000.

Bunge, Richard H.: *See*—
Bloem, Russell J.; Bunge, Richard H.; and French, James C., 4,382,952, Cl. 424-279.000.

Bur, Marc, to Merlin Gerin. Four-pole low voltage circuit breaker. 4,383,146, Cl. 200-17.00R.

Burdick, Bruce A. Beam furniture system. 4,382,642, Cl. 312-194.000.

Burns, Bruce P., to United States of America, Army. Longitudinal reinforcement of high explosive fill in projectiles. 4,382,409, Cl. 102-289.000.

Burnup & Sims Inc.: *See*—
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,382,581, Cl. 254-134.3FT.

Burroughs Corporation: *See—*
Tam, Richard K. W., 4,383,314, Cl. 370-86.000.

Burton, Bruce L., to Dow Chemical Company, The. Urethane modified polymers having hydroxyl groups. 4,383,091, Cl. 525-528.000.

Busch, Douglas F.: *See—*
Lightle, Robert E.; Lockwood, James R.; Busch, Douglas F.; and Mosholder, Michael B., 4,382,606, Cl. 280-154.50R.

Bush, Charles N.: *See—*
Hall, Dale R.; and Bush, Charles N., 4,383,048, Cl. 521-85.000.

Bussiere, Guy: *See—*
Devos, Francis; Bussiere, Guy; and Huchette, Michel, 4,382,962, Cl. 426-3.000.

Butland Industries, Ltd.: *See—*
Sadler, Frederick J., 4,382,969, Cl. 426-272.000.

Butler, Jerome K.: *See—*
Botez, Dan; and Butler, Jerome K., 4,383,320, Cl. 372-45.000.

Buttner, Gerhard; Judat, Artur; Allenbach, Udo; and Lenthe, Manfred, to Bayer Aktiengesellschaft. Preparation of monoalkyl ethers of hydroxyphenols. 4,383,126, Cl. 568-650.000.

Buttner, Hans H. Machine for binding packages. 4,382,405, Cl. 100-7.000.

Buzas, Andre; Melon, Jean-Marie; Lavielle, Gilbert; and Champagnac, Andre, to Buzas, Andre; Melon, Jean-Marie; Laboratoires Sauba S.A.; and Universite d'Orleans. Analgesic drug containing a derivative of benzylpiperazine. 4,382,935, Cl. 424-250.000.

Buzzelli, Edward S., to Westinghouse Electric Corp. Iron-silver battery having a shunt electrode. 4,383,015, Cl. 429-206.000.

C. Conradty Nurnberg GmbH & Co KG: *See—*
Schieber, Franz; and Mayer, Dieter, 4,383,321, Cl. 373-88.000.

C. I. Kasei Co. Ltd.: *See—*
Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, 4,382,999, Cl. 428-494.000.

C. Van der Lely N.V.: *See—*
Van der Lely, Ary; and Kuipers, Arie, 4,382,473, Cl. 172-33.000.

Cadman, Martyn-Andrew: *See—*
Grandjean, Pierre-Andre; Cadman, Martyn-Andrew; Vuilleumier, Raymond; and Guye, Raymond, 4,383,255, Cl. 340-764.000.

Caldwell, Richard L., to Mobil Oil Corporation. Acoustic well logging device for detecting shear and compressional waves. 4,383,308, Cl. 367-31.000.

California Institute of Technology: *See—*
Gupta, Amitava; Ingham, John D.; and Yavrouian, Andre H., 4,383,129, Cl. 136-251.000.
Jamieson, Robert S., 4,382,655, Cl. 350-96.120.

Calisto, Anthony. Interchangeable nozzle apparatus. 4,382,530, Cl. 222-567.000.

Call, Daniel D. Line length measuring device. 4,382,336, Cl. 33-134.00R.

Calvert, James W.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,382,760, Cl. 425-139.000.

Cammi, Ferdinando. Workbench apparatus, particularly for working on diesel engine injection pumps. 4,382,589, Cl. 269-50.000.

Canon Denshi Kabushiki Kaisha: *See—*
Hashimoto, Teiji; Senuma, Michio; and Shimada, Fumio, 4,382,670, Cl. 354-246.000.

Canon Kabushiki Kaisha: *See—*
Hashimoto, Teiji; Senuma, Michio; and Shimada, Fumio, 4,382,670, Cl. 354-246.000.
Kamata, Shigeru, 4,382,661, Cl. 350-430.000.
Kiuchi, Masayoshi; and Kawamura, Masaharu, 4,382,667, Cl. 354-43.000.
Ohtaki, Shohei; Nakamura, Zenzo; and Nagase, Naoki, 4,382,666, Cl. 354-33.000.
Ozawa, Masakazu; Watanabe, Kunio; Kojima, Kiyohide; Seito, Shinichi; and Miyazaki, Takashi, 4,383,263, Cl. 346-140.00R.
Suzuki, Kiyoshi; and Kawashima, Hirokuni, 4,382,917, Cl. 423-561.00B.
Tsukata, Masaharu, 4,382,677, Cl. 355-76.000.

Capasso, Federico, to Bell Telephone Laboratories, Incorporated. Graded bandgap photodetector. 4,383,269, Cl. 357-30.000.

Cargill Incorporated: *See—*
Mickus, James C.; Hesse, Robert L.; and Pruitt, Gary L., 4,382,966, Cl. 426-69.000.

Cargioli, Joseph D.: *See—*
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,383,003, Cl. 428-611.000.

Carle, Udo: *See—*
Vural, Gulertan; and Carle, Udo, 4,382,715, Cl. 404-133.000.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,383,154, Cl. 200-291.000.

Carlson, Daniel C.: *See—*
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,382,581, Cl. 254-134.3FT.

Carpenter, John: *See—*
Pennell, Anthony R.; and Carpenter, John, 4,382,911, Cl. 423-175.000.

Carr, Brian J.: *See—*
Slocki, Allen T.; Carr, Brian J.; and Simone, John F., 4,383,090, Cl. 525-502.000.

Carr, Charles H., to Carr, Lola Mae. Gas and steam generator. 4,382,771, Cl. 431-158.000.

Carr, Lola Mae: *See—*
Carr, Charles H., 4,382,771, Cl. 431-158.000.

Carrico, Robert J.: *See—*
Bogulaski, Robert C.; and Carrico, Robert J., 4,383,031, Cl. 435-7.000.

Casimir Kast GmbH & Co. KG: *See—*
Nopper, Herbert; and Knoch, Wolfgang, 4,382,758, Cl. 425-82.100.

Castner, Kenneth F.; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Molecular weight regulation of cis-1,4-polybutadiene. 4,383,097, Cl. 526-133.000.

Castolin S.A.: *See—*
Luscher, Paul; and Strinse, Hans-Theo, 4,382,811, Cl. 65-374.110.

Castro, Horacio: *See—*
Castro, Marcelo; and Castro, Horacio, 4,383,138, Cl. 179-84.00C.

Castro, Marcelo; and Castro, Horacio. Method and apparatus for processing coded information received through a telephone line during the inter-ringing periods. 4,383,138, Cl. 179-84.00C.

Catalysts & Chemicals Ind. Co., Ltd.: *See—*
Yamamoto, Tamechika; Saitoh, Sumio; Yoshimura, Hikoji; and Yoshimura, Masaru, 4,383,057, Cl. 523-333.000.

Caterpillar Tractor Co.: *See—*
Hoffman, John P., 4,383,303, Cl. 364-565.000.
Satzler, Ronald L., 4,382,834, Cl. 156-382.000.

Cazaux, Joel: *See—*
Pietryka, Joseph; Cazaux, Joel; and Guyot, Andre, 4,382,462, Cl. 164-426.000.

Cellu Products Company: *See—*
Miller, Alan H., 4,382,507, Cl. 206-204.000.

Centennial Machine Co., Inc.: *See—*
Harben, Grover S., Jr.; Ellis, James S.; and Emmett, Joe M., 4,382,313, Cl. 17-11.000.

Centre Electronique Horloger S.A.: *See—*
Grandjean, Pierre-Andre; Cadman, Martyn-Andrew; Vuilleumier, Raymond; and Guye, Raymond, 4,383,255, Cl. 340-764.000.

Centre Technique des Industries Mecaniques (CETIM): *See—*
Le Peuven, Yves; and Gabard, Danial, 4,382,535, Cl. 228-262.000.

Centrum Konstrukcyjno-Technologiczne Maszyn Gorniczych "KOMAG": *See—*
Romanowicz, Stanislaw; Skoczynski, Wojciech; and Janik, Edward, 4,382,722, Cl. 405-291.000.

Century 21 Pollution Control, Inc.: *See—*
Diachuk, Wolodymyr, 4,382,807, Cl. 55-269.000.

Chahanian, Andre, to Chaussures Helene. Stretching machine. 4,382,343, Cl. 38-102.910.

Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., to Allied Corporation. Hydrothermal crystal growing process and apparatus. 4,382,840, Cl. 156-623.00R.

Champagnac, Andre: *See—*
Buzas, Andre; Melon, Jean-Marie; Lavielle, Gilbert; and Champagnac, Andre, 4,382,935, Cl. 424-250.000.

Champion International Corporation: *See—*
Williams, Donald L., 4,382,514, Cl. 206-626.000.

Chan, Clarence K.: *See—*
Mitchell, James K.; Villet, Willem C. B.; Tringale, Philip T.; and Chan, Clarence K., 4,382,384, Cl. 73-594.000.

Chan, David C. K., to Chevron Research Company. Fungicidal N-1-substituted cyclopropyl-N-acyl-2,6-dialkylaniline. 4,382,954, Cl. 424-285.000.

Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Roofing asphalt formulation. 4,382,989, Cl. 428-280.000.

Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., to General Motors Corporation. Method for manufacturing a wound foil structure comprising distinct catalysts. 4,382,323, Cl. 29-157.00R.

Charbonnages de France: *See—*
Delessard, Serge L. J. E.; Puff, Roger M.; and Kita, Jean-Claude, 4,382,777, Cl. 432-15.000.

Chatel, Robert E.: *See—*
McDonald, Thomas J.; and Chatel, Robert E., 4,382,317, Cl. 24-155.0BB.

Chaussadas, Jean, to Mead Corporation, The. Multi unit package incorporating wrap-around handle. 4,382,506, Cl. 206-200.000.

Chaussures Helene: *See—*
Chahanian, Andre, 4,382,343, Cl. 38-102.910.

Chemcut Corporation: *See—*
Curcio, Joseph J., 4,382,308, Cl. 15-77.000.

Chemetron Process Equipment, Inc.: *See—*
Hawley, Charles C.; and Sieradzki, Benjamin, 4,382,404, Cl. 99-472.000.

Chemplex Company: *See—*
Pullukat, Thomas J.; and Hoff, Raymond E., 4,383,119, Cl. 556-412.000.
Shida, Mitsuzo; Pullukat, Thomas J.; and Hoff, Raymond E., 4,383,096, Cl. 526-129.000.

Chen, Bor-Uei, to Hughes Aircraft Company. Method of laser enhanced thermal diffusion. 4,382,978, Cl. 427-53.100.

Chevron Research Company: *See—*
Chan, David C. K., 4,382,954, Cl. 424-285.000.
Hubred, Gale L., 4,382,845, Cl. 204-111.000.
Kurkov, Victor P., 4,382,948, Cl. 424-273.00P.
Woo, Gar L.; and Parker, Phillip H., 4,383,065, Cl. 524-114.000.

Chi, Chang V., to Energy Research Corporation. Fuel cell assembly with electrolyte transport. 4,383,008, Cl. 429-38.000.

Ching, Larry K. W.: *See—*
McClelland, Donald H.; Uba, Toshio; and Ching, Larry K. W., 4,383,011, Cl. 429-54.000.

Chloride Silent Power Limited: *See—*
Bindin, Peter J.; and Jones, Ivor W., 4,383,013, Cl. 429-112.000.

Chmiel, Horst; and Hellwig, Gunter, to Fraunhofer-Gesellschaft zur Forderung der angewandten. Process and an agent for the adsorption and catalytic decomposition of foul-smelling intestinal gases. 4,382,913, Cl. 423-230.000.
Chown, Martin; and Farrington, Jeffrey G., to International Standard Electric Corporation. Measurement of rotation rate using Sagnac effect. 4,382,681, Cl. 356-350.000.
Christensen, Erik C. P.: *See*—
Andersen, Knud T.; and Christensen, Erik C. P., 4,382,561, Cl. 241-121.000.
Christenson, Christopher P.: *See*—
Henslee, Walter W.; Morrow, Stanley J.; Lindsey, John S.; Christenson, Christopher P.; and Schwantje, Hans H., 4,382,997, Cl. 428-446.000.
Christian, Donald K. Novel totalizer application for newspaper vending machine. 4,382,499, Cl. 194-1.00L.
Christy, Mark H.; and Spencer, Lloyd. Irrigation emitter. 4,382,549, Cl. 239-106.000.
Chronowski, Thomas G.; and Wendler, Paul O., to General Motors Corporation. Bearing and seal assembly for a hydraulic pump. 4,382,756, Cl. 418-133.000.
Chu, David C.; and Offermann, Robert W., to Hewlett-Packard Company. Automatic echo-chamber for measuring single time intervals by replication and averaging. 4,383,166, Cl. 377-20.000.
Chun, Victor L., to Hurst Performance, Inc. Drag free disc brake assembly having automatically adjusting caliper. 4,382,491, Cl. 188-71.800.
Cia. Vinicola del Vergel, S.A.: *See*—
Aleff, Hans P., 4,382,520, Cl. 215-21.000.
Ciba-Geigy Corporation: *See*—
de Montmollin, Rene; and Mausezahl, Dieter, 4,382,890, Cl. 260-156.000.
Green, George E.; and Irving, Edward, 4,383,025, Cl. 430-280.000.
Huff, Robert G.; and O'Neill, John, 4,383,298, Cl. 364-300.000.
Loew, Peter, 4,382,801, Cl. 8-538.000.
Lohse, Friedrich; Trachsler, Dieter; and Jeannerat, Claude, 4,383,107, Cl. 528-323.000.
Rohringer, Peter; and Berini, Rene, 4,382,884, Cl. 252-606.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,382,893, Cl. 260-465.00D.
Tissington, Peter; Giddings, Rodney M.; and Pearse, Michael T., 4,382,894, Cl. 260-465.00D.
Cincinnati Milacron Inc.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,382,760, Cl. 425-139.000.
Circuit Research Labs: *See*—
Jones, Ronald R., 4,383,229, Cl. 333-176.000.
CKD Corporation: *See*—
Hayakawa, Masatoshi; and Tanioka, Masahiro, 4,382,645, Cl. 445-69.000.
Clabburn, Robin J. T., to Raychem Limited. Shielded electrical cable joints and terminations and sleeve and method for forming same. 4,383,131, Cl. 174-73.00R.
Cleaver, Laird C.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,382,465, Cl. 165-95.000.
Clitherow, John W.: *See*—
Bradshaw, John; Judd, Duncan B.; Price, Barry J.; and Clitherow, John W., 4,382,929, Cl. 424-246.000.
Closet Systems Corp.: *See*—
Kashden, R. Paul, 4,382,640, Cl. 312-5.000.
Clough, Philip J.; Hubbard, Roswell E.; McDermott, John F.; and Miekka, Richard G., to Dennison Manufacturing Company. Metallization of support members. 4,382,831, Cl. 156-94.000.
Coates, Don M., to Du Pont de Nemours, E. I., and Company. Coating composition for fibrous polyolefin sheets. 4,382,990, Cl. 428-290.000.
Coca Cola Company, The: *See*—
Gudnason, Geir V., 4,382,823, Cl. 127-57.000.
Coggins, Dolphus L.; Fannin, Eugene R.; and Gumbelevicius, John, to McDonnell Douglas Corporation. Process for detecting soft spots in aluminum. 4,383,042, Cl. 436-5.000.
Cohn, Alan E., to Goodyear Tire & Rubber Company, The. Method of constructing tire with identification tag therefor. 4,382,830, Cl. 156-64.000.
Cole, Edward L.; and Suggitt, Robert M., to Texaco Inc. Preparation of alkyl sulfonates. 4,382,895, Cl. 260-505.00P.
Cole National Corporation: *See*—
Sorrells, Frank D., 4,382,351, Cl. 51-217.00L.
Colgate-Palmolive Company: *See*—
Vesborg, Steen, 4,382,504, Cl. 206-44.00R.
Colglazier, Donald F.: *See*—
Beran, Mark A.; and Colglazier, Donald F., 4,382,593, Cl. 271-12.000.
Collins, Ellwood J.; and Collins, Helen M. Therapeutic aid for the handic apped. 4,382,795, Cl. 434-258.000.
Collins, Helen M.: *See*—
Collins, Ellwood J.; and Collins, Helen M., 4,382,795, Cl. 434-258.000.
Collis, George C. Toothbrush. 4,382,309, Cl. 15-167.00A.
Colombo, Americo: *See*—
Colombo, Domenico; and Colombo, Americo, 4,382,789, Cl. 433-89.000.
Colombo, Domenico; and Colombo, Americo, to Colombo, Domenico. Manual pressure syringe for odontological use. 4,382,789, Cl. 433-89.000.
Combustion Engineering, Inc.: *See*—
Palmer, David N., 4,383,087, Cl. 525-274.000.
Palmer, David N., 4,383,088, Cl. 525-274.000.
Commissariat a l'Energie Atomique: *See*—
Robin, Marcel, 4,382,907, Cl. 376-283.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Whillans, Francis D., 4,382,982, Cl. 427-130.000.
Communication Systems, Inc.: *See*—
Meyer, Daniel, 4,382,649, Cl. 339-39.000.
Compagnie Generale d'Automatisme: *See*—
Robert, Richard C., 4,383,239, Cl. 340-38.00R.
Compagnie Generale de Manutention et de Stockage: *See*—
Bondoux, Guy, 4,382,518, Cl. 211-192.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Lesieur, Jean-Paul, 4,383,281, Cl. 360-45.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Society Anonyme): *See*—
Maury, Christian, 4,383,207, Cl. 318-560.000.
Congleton, Wayne L., to Dolco Packaging Corporation. Foam egg carton. 4,382,536, Cl. 229-2.5EC.
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., to Warner Lambert Company. 3-[2-(Mono-and dialkylamino)propyl]-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-C]pyridin-5-ones useful for treating bronchospastic diseases. 4,382,939, Cl. 424-256.000.
Conservolite, Inc.: *See*—
Hess, John E., II; and Braumuller, Robert C., 4,383,288, Cl. 362-32.000.
Constant, Brigitte: *See*—
Hamelin, Benoit; and Constant, Brigitte, 4,382,511, Cl. 206-427.000.
Cooley, David J.; and Ebbinga, Theodore C., to Sperry Corporation. Digital servomotor drive apparatus. 4,383,245, Cl. 340-347.0DA.
Copeland, Peter. Recorder with timing channel. 4,383,280, Cl. 360-18.000.
Corcelle, Francois, to Ateliers des Charmilles S.A. Threading and conveying device for an electrode wire in an EDM apparatus. 4,383,161, Cl. 219-69.00W.
Corey, Joseph T., to Permclip Products Corporation. Paper compressor. 4,382,708, Cl. 402-15.000.
Cormier, Lynn J. Heavy pipe joining system. 4,382,325, Cl. 29-238.000.
Corning Limited: *See*—
Morris, Lawrence J., 4,382,579, Cl. 251-214.000.
Cosmos Research Associates: *See*—
Sommers, Michael W., 4,382,445, Cl. 604-8.000.
Cotty, Val F.: *See*—
Alonso, Richard J.; Nersesian, Ara; Cotty, Val F.; and Henry, S. Mark, 4,382,919, Cl. 424-65.000.
Cousse, Henri: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,382,930, Cl. 424-248.540.
Coussot, Gerard; and Texier, Pierre, to Thomson-CSF. Elastic surface wave pressure gauge and pressure sensor for such a gauge. 4,382,386, Cl. 73-703.000.
Coyle, Peter J.; and Crouthamel, Marvin S., to RCA Corporation. Vacuum lamination fixture. 4,382,833, Cl. 156-382.000.
Craig, John L., to Transamerica DeLaval Inc. Draw band line support. 4,382,570, Cl. 248-74.00R.
Cresent Roofing Company Limited: *See*—
Brill-Edwards, Kenneth O. P., 4,382,435, Cl. 126-429.000.
Cromer, Charles F.; and Freeman, Willie B., to Westinghouse Electric Corp. Circuit-interrupters having shunting capacitance around the separable power contacts with capacitance disconnecting means therefor. 4,383,150, Cl. 200-144.0AP.
Crosby, John B., to Beckman Instruments, Inc. Voltage-controlled constant current source. 4,383,188, Cl. 307-497.000.
Crosby, Thomas G.: *See*—
Berling, Kenneth G.; and Crosby, Thomas G., 4,382,924, Cl. 424-180.000.
Crouthamel, Marvin S.: *See*—
Coyle, Peter J.; and Crouthamel, Marvin S., 4,382,833, Cl. 156-382.000.
Crowell, William F.: *See*—
Peacey, John G.; Crowell, William F.; and Whitmore, Peter, 4,382,778, Cl. 432-18.000.
Crown Marking Equipment Co.: *See*—
Goldstein, Edwin W., 4,382,407, Cl. 101-405.000.
Cuca, Robert C.: *See*—
Beinke, Hans C.; and Cuca, Robert C., 4,382,802, Cl. 44-51.000.
Curcio, Joseph J., to Chemcut Corporation. Scrubbing torque monitoring and control system. 4,382,308, Cl. 15-77.000.
Cusick, Timothy H.; and Giuffrida, Eric R. Real estate game apparatus. 4,382,602, Cl. 273-256.000.
Cutter Laboratories, Inc.: *See*—
Lee, Charles E., 4,382,679, Cl. 356-237.000.
D.S.L. Inc.: *See*—
Lum, Albert C. H., 4,382,621, Cl. 292-210.000.
Daar, Horst: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,382,805, Cl. 55-2.000.
Daiichi Seiyaku Co., Ltd.: *See*—
Hayakawa, Isao; Hiramitsu, Tokiyuki; and Tanaka, Yoshiaki, 4,382,892, Cl. 260-243.300.
Daikin Kogyo Co., Ltd.: *See*—
Hattori, Shuzo; Morita, Shinzo; and Fujii, Tsuneo, 4,382,985, Cl. 427-41.000.

Daimler-Benz Aktiengesellschaft: *See*—
Thoma, Frank; and Oblander, Kurt, 4,382,553, Cl. 239-533.900.
Dainippon Inc. & Chemicals Inc.: *See*—
Suzuki, Yasuyuki; and Ito, Tadashi, 4,382,798, Cl. 8-94.10R.
Dainippon Pharmaceutical Co., Ltd.: *See*—
Matsumoto, Jun-ichi; and Nakamura, Shinichi, 4,382,937, Cl. 424-256.000.
Dainippon Screen Mfg., Ltd.: *See*—
Hirofumi, Shimizu; Akira, Yamano; and Shinzo, Ikeuchi, 4,383,017, Cl. 430-7.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Ohta, Koichiro; and Kitai, Makoto, 4,382,676, Cl. 355-75.000.
Dale, David; and Barksdale, Robert C., to Munsingwear, Inc. Method and apparatus for producing patterning effect on knitted fabric. 4,382,371, Cl. 66-213.000.
Dalman, Donald P.: *See*—
Jensen, James W.; Miller, Stanley J.; Heniser, Eugene W.; Dalman, Donald P.; and Grevenstuk, Garth A., 4,382,737, Cl. 413-56.000.
Dammig, Joachim: *See*—
Goldammer, Georg; Mahrt, Gunter; and Dammig, Joachim, 4,382,316, Cl. 19-81.000.
Darden, Boyd E.: *See*—
Miller, Robert C.; Bradley, John J.; Darden, Boyd E.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,383,295, Cl. 364-200.000.
Dark, Steven C.: *See*—
Morey, Kenneth H.; and Dark, Steven C., 4,383,221, Cl. 324-439.000.
Daubenbuchel, Werner; and Hess, Dieter, to Krupp-Kautex Maschinenbau GmbH. Controlling an extrusion blowing process. 4,382,761, Cl. 425-140.000.
Davenport, Keith B., to International Computers Ltd. Wire matrix printing apparatus. 4,382,701, Cl. 400-124.000.
Davidson, Allen L., to Motorola, Inc. Method and means of preventing oscillations in a same-frequency repeater. 4,383,331, Cl. 455-24.000.
Davies, Glyndwr J., to Glacier Metal Company Limited, The. Polyarylene sulphide compositions. 4,383,069, Cl. 524-299.000.
Davis, Lawrence E.; and Patel, Naren I., to Siecor Corporation. Filling materials for communications cable. 4,382,821, Cl. 106-272.000.
Davis, Thomas B.; and Girard, Theodore A., to Glyco Chemicals, Inc. Low temperature bleaching with positive bromine ions (Br^+). 4,382,799, Cl. 8-107.000.
Davis, Wayne T.: *See*—
Wadsworth, Larry C.; and Davis, Wayne T., 4,382,378, Cl. 73-38.000.
Davis, Wendell: *See*—
Minnis, C. W.; Hawkins, Hubert A.; and Davis, Wendell, 4,382,591, Cl. 269-156.000.
Davy McKee (Oil & Chemicals) Limited: *See*—
Harris, Norman; Dennis, Alan J.; and Harrison, George E., 4,383,125, Cl. 568-496.000.
Dean, Leonard F. Convertible picnic table and bench. 4,382,627, Cl. 297-124.000.
Dearlove, Thomas J.; and Gray, Richard K., to General Motors Corporation. Epoxy adhesive for structurally bonding molded SMC. 4,383,060, Cl. 523-429.000.
de Buda, Eric G.; and Allen, Anthony L. Pipe inspection device. 4,382,383, Cl. 73-592.000.
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., to University of Birmingham, The; and Stichting Rega V.Z.W. E-5-(2-Halogenovinyl)-2'-deoxycytidines. 4,382,925, Cl. 424-180.000.
Deepsea Ventures, Inc.: *See*—
Blanchet, James, 4,382,361, Cl. 60-415.000.
Deere & Company: *See*—
Lysenko, George P., 4,382,624, Cl. 294-88.000.
Spencer, Joseph C., 4,382,483, Cl. 180-153.000.
DeFelice, Charles P.; and LeRoux, Donald F., to Du Pont de Nemours, E. I., and Company. X-Ray cassette having quick film release mechanism. 4,383,330, Cl. 378-187.000.
de Figueiredo, Mario P.; York, Lawrence R.; and Long, James L., to Ralston Purina Company. Process for the production of a frozen chopped egg product. 4,382,973, Cl. 426-614.000.
de Graaf, Theodorus F. M.; and Delahaye, Hubertus J. A., to Stamicarbon, B.V. Method for the preparation of aldehydes. 4,383,124, Cl. 568-485.000.
Degussa Aktiengesellschaft: *See*—
Zwingmann, Gerhard, 4,382,909, Cl. 420-588.000.
Delahaye, Hubertus J. A.: *See*—
de Graaf, Theodorus F. M.; and Delahaye, Hubertus J. A., 4,383,124, Cl. 568-485.000.
Delalande S.A.: *See*—
Takaoka, Nobuo; and Ageta, Kosei, 4,382,329, Cl. 29-726.000.
Delessard, Serge L. J. E.; Puff, Roger M.; and Kita, Jean-Claude, to Charbonnages de France. Process for modifying the properties of a swelling coal, an installation for carrying out the process and a chamber for treatment of coal by fluidization and crushing. 4,382,777, Cl. 432-15.000.
Delorean Research Limited Partnership: *See*—
Spooner, Colin R., 4,382,626, Cl. 296-31.00P.
Demny, Werner: *See*—
Brauer, Hans; and Demny, Werner, 4,382,376, Cl. 72-205.000.
de Montmollin, Rene; and Mausezahl, Dieter, to Ciba-Geigy Corporation. Fiber reactive sulfo aryl azo N-substituted pyridone-3-carboxamide dyestuffs. 4,382,890, Cl. 260-156.000.
Denney, Jerry W.; and Long, Robert L., to American Monitor Corporation. Magnesium assay with calmagite or eriochrome black T reagents. 4,383,043, Cl. 436-74.000.
Dennis, Alan J.: *See*—
Harris, Norman; Dennis, Alan J.; and Harrison, George E., 4,383,125, Cl. 568-496.000.
Dennis Smith Consulting Limited: *See*—
Smith, Dennis C.; and Maijer, Rolf, 4,382,792, Cl. 433-217.000.
Dennison Manufacturing Company: *See*—
Clough, Philip J.; Hubbard, Roswell E.; McDermott, John F.; and Miekka, Richard G., 4,382,831, Cl. 156-94.000.
de Ronde, Frans C., to U.S. Philips Corporation. Suspended microstrip circuit for the propagation of an odd-wave mode. 4,383,227, Cl. 333-121.000.
Derrien, Jean-Yves, to Rhone-Poulenc Industries. Preparation of molybdenum/tungsten mixed oxide catalysts. 4,382,880, Cl. 252-465.000.
Derungs, Romano, to Hoffmann-La Roche Inc. Tetrahydrothiepino[4,5-d]imidazole derivatives, composition and method of use. 4,382,945, Cl. 424-273.00R.
De Torre, Robert P. Shear wheel for cutting fabric. 4,382,397, Cl. 83-508.000.
DeVellis, Robert: *See*—
Baker, Alvin W.; DeVellis, Robert; Martin, Patrick H.; and Withers, Robin A., 4,383,056, Cl. 523-328.000.
Devos, Francis; Bussiere, Guy; and Huchette, Michel, to Societe Roquette Freres. Sugarless-type chewing gum. 4,382,962, Cl. 426-3.000.
Dezsi, Istvan, to Konsumex Kulkereskedelmi Vallalat. Cylindrical logical toy. 4,382,601, Cl. 273-153.00S.
Diachuk, Wolodymyr, to Century 21 Pollution Control, Inc. Apparatus for separating foreign matter from a gas with a heat exchanger. 4,382,807, Cl. 55-269.000.
Diamond Shamrock Corporation: *See*—
Gestaut, Lawrence J.; and Solomon, Frank, 4,382,904, Cl. 264-49.000.
Slocki, Allen T.; Carr, Brian J.; and Simone, John F., 4,383,090, Cl. 525-502.000.
Solomon, Frank, 4,382,875, Cl. 252-425.300.
Diaz, Zaida, to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a stabilized iron chelate solution. 4,382,918, Cl. 423-573.00R.
Digital Equipment Corp.: *See*—
Machut, Dan M., 4,383,283, Cl. 360-97.000.
Dillman, Terry R., to Illinois Water Treatment Company. Bacteria-removing cartridge and preparatory process. 4,382,862, Cl. 210-668.000.
Dishaw, John P.: *See*—
Smith, Ronald J.; and Dishaw, John P., 4,383,165, Cl. 219-121.0LN.
Disteldorf, Josef: *See*—
Ucinhazska, Bruno; Disteldorf, Josef; Hubel, Werner; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,382,555, Cl. 239-714.000.
Dittell, Edward W. Geothermal hot water system. 4,382,368, Cl. 62-238.600.
Diversified Products Corporation: *See*—
Silberman, Ira J., 4,382,596, Cl. 272-118.000.
Dr. C. Otto & Comp. G.m.b.H.: *See*—
Koddenberg, Theo; and Janssen, Dieter, 4,382,841, Cl. 202-256.000.
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Weiershausen, Rolf, 4,382,842, Cl. 202-263.000.
Wackerbarth, Folkard; Thubeauville, Heinz; and Kleinert, Horst, 4,382,772, Cl. 431-189.000.
Dolco Packaging Corporation: *See*—
Congleton, Wayne L., 4,382,536, Cl. 229-2.5EC.
Dominge, Richard A., to Bordier's Nursery California, Inc. Pruning machine. 4,382,332, Cl. 30-379.000.
Domres, Franklin W. Gear and rack portable torch drive. 4,382,583, Cl. 266-77.000.
Donnelly, Donald E.: *See*—
Hess, George E.; Donnelly, Donald E.; and Reinwart, Robert E., 4,382,433, Cl. 126-113.000.
Donohue, Paul C., to Du Pont de Nemours, E. I., and Company. Magnesium compositions and process for forming MGO film. 4,382,980, Cl. 427-77.000.
Dorler, Jack A.; Jenkins, Michael O.; Mosley, Joseph M.; and Weitzel, Stephen D., to International Business Machines Corporation. AC Measurement means for use with power control means for eliminating circuit to circuit delay differences. 4,383,216, Cl. 323-282.000.
D'Oro, Enzo C., to Italtel Societa Italiana Telecomunicazioni S.p.A. Circuit arrangement for summing the powers of two isofrequential microwave signals. 4,383,189, Cl. 307-529.000.
Dorr-Oliver Incorporated: *See*—
Kosonen, Vaino J., 4,382,848, Cl. 204-194.000.
Dow Chemical Company, The: *See*—
Baker, Alvin W.; DeVellis, Robert; Martin, Patrick H.; and Withers, Robin A., 4,383,056, Cl. 523-328.000.
Burton, Bruce L., 4,383,091, Cl. 525-528.000.
Grinstead, Robert R., 4,382,872, Cl. 252-189.000.
Henslee, Walter W.; Morrow, Stanley J.; Lindsey, John S.; Christenson, Christopher P.; and Schwantje, Hans H., 4,382,997, Cl. 428-446.000.
Stevens, Timothy S.; and Langhorst, Martin A., 4,383,047, Cl. 521-28.000.
Wessling, Ritchie A.; Yats, Larry D.; and Perry, William O., 4,383,073, Cl. 525-486.000.
Yates, Ronald L., 4,383,120, Cl. 556-470.000.

Dowdle, Deanna M.: *See—*
Roberts, Sidney J.; and Dowdle, Deanna M., 4,383,020, Cl. 430-127.000.

Draiswerke GmbH: *See—*
Duerr, Herbert, 4,382,557, Cl. 241-1.000.

Drdlik, Frank J. Sanitary dispensing closure. 4,382,529, Cl. 222-531.000.

Dresser Industries, Inc.: *See—*
Kirkham, Steven C., 4,382,485, Cl. 180-306.000.
Klem, John E.; Hammoud, Ezzat A.; and Nelson, Daniel E., 4,382,744, Cl. 414-712.000.
Moore, R. Dale, 4,382,481, Cl. 180-54.00A.

Drexler Technology Corporation: *See—*
Bouldin, Eric W., 4,383,024, Cl. 430-271.000.

Drilling & Service U.K. Limited: *See—*
Barr, John D., 4,382,477, Cl. 175-410.000.

Driscoll, Joseph R., to Altus Corporation. Liquid cathode electrochemical cell with improved geometry and containing a high efficiency cathode current collector. 4,383,012, Cl. 429-101.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Symmetrical insecticidal bis-carbamate compounds. 4,382,957, Cl. 424-327.000.

Dualmatic Manufacturing Company: *See—*
Fleitas, Arthur M., 4,382,495, Cl. 192-36.000.

Dube, Gerald W.; Strycharz, Paul B.; Steiger, Ross G.; and Johnston, Douglas N., to Litton Industrial Products, Inc. Water conservation and waste water treatment system. 4,382,859, Cl. 210-96.100.

DuBois, Gilles: *See—*
Hulin, Jean P.; and DuBois, Gilles, 4,382,732, Cl. 409-304.000.

Duckworth, David M., to Beecham Group Limited. Secondary amines and compositions for treatment of hypoglycaemia or obesity. 4,382,958, Cl. 424-330.000.

Dudek, Michael T.; and Robinson, John M., to General Electric Company Limited, The. Digital data transmission systems. 4,383,324, Cl. 375-76.000.

Dudley, Robert H., to Reclamet, Inc. Pivoted and balanced gate for a material separator. 4,382,858, Cl. 209-136.000.

Duerr, Herbert, to Draiswerke GmbH. Method and apparatus for de-aerating viscous mixing stock. 4,382,557, Cl. 241-1.000.

Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Method and apparatus for rearing aquatic animals. 4,382,423, Cl. 119-2.000.

Dugan, Timothy: *See—*
Dugan, Charles; and Dugan, Timothy, 4,382,423, Cl. 119-2.000.

Dugge, Richard H., to ACF Industries, Incorporated. Pneumatic outlet valve. 4,382,725, Cl. 406-131.000.

Dummer, Robert E., to Bucyrus-Erie Company. Unloading arrangement for hydraulic swing circuit or the like. 4,382,360, Cl. 60-444.000.

Dumont, Claude: *See—*
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,382,942, Cl. 424-263.000.

Dunphy, Gerald F.; and Newman, Donald J., to Ogden Industries Pty. Limited. Window operator. 4,382,349, Cl. 49-325.000.

Du Pont de Nemours, E. I., and Company: *See—*
Coates, Don M., 4,382,990, Cl. 428-290.000.
DeFelice, Charles P.; and LeRoux, Donald F., 4,383,330, Cl. 378-187.000.
Donohue, Paul C., 4,382,980, Cl. 427-77.000.
Hawkins, William E., 4,382,396, Cl. 83-98.000.
Irwin, Robert S., 4,383,105, Cl. 528-170.000.
Levitt, George, 4,383,113, Cl. 544-211.000.
Middleton, William J., 4,382,891, Cl. 260-239.30D.
Pechhold, Engelbert, 4,383,100, Cl. 528-76.000.
Rees, Richard W., 4,383,063, Cl. 524-91.000.
Schadt, Frank L., III, 4,383,023, Cl. 430-264.000.
Schoenberg, Allan R., 4,383,030, Cl. 430-599.000.

Dupree, Robert L., to Phillips Petroleum Company. Process for curing poly(arylene sulfides). 4,383,080, Cl. 525-537.000.

Durand, Jean-Pierre: *See—*
Gatellier, Claude; Plessis, Andree; Gateau, Patrick; and Durand, Jean-Pierre, 4,382,873, Cl. 252-312.000.

Durr, Helmut: *See—*
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, 4,383,055, Cl. 523-221.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,382,358, Cl. 57-243.000.

Dynapol: *See—*
Wang, Patricia C.; and Wingard, Robert E., Jr., 4,382,800, Cl. F-404.000.

E M I Limited: *See—*
Hajimichael, Agathangelos; Hopper, Sidney; and Smith, Peter K., 4,383,099, Cl. 528-60.000.

Eastman Kodak Company: *See—*
Martin, Thomas W.; and Sandhu, M. Akram, 4,383,018, Cl. 430-14.000.
Olsen, Eric G.; and Jackson, Winston J., Jr., 4,383,101, Cl. 528-93.000.

Eaton Corporation: *See—*
Fulton, Edward, 4,383,149, Cl. 200-68.000.
Tenner, Richard B., 4,383,155, Cl. 200-315.000.

Ebauches Electroniques, S.A.: *See—*
Kumar, Niraj; and Varney, John, 4,382,696, Cl. 368-240.000.

Ebauches, S.A.: *See—*
Erard, Raoul H., 4,382,690, Cl. 368-77.000.
Wiget, Fridolin; and Besson, Rene, 4,382,692, Cl. 368-157.000.

Ebbinga, Theodore C.: *See—*
Cooley, David J.; and Ebbinga, Theodore C., 4,383,245, Cl. 340-347.0DA.

Echigo, Yoshiaki: *See—*
Sasaki, Akio; and Echigo, Yoshiaki, 4,383,104, Cl. 528-148.000.

Eda, Kazuo; Kikuchi, Yasuharu; and Matsuoka, Michio, to Matsushita Electric Industrial Co., Ltd. Voltage-dependent resistor. 4,383,237, Cl. 338-21.000.

Eddy, William R.; Oliver, Ronald R.; and Young, Jerry W., to Sealright Co., Inc. Container processing apparatus and method. 4,382,422, Cl. 118-669.000.

Eguchi, Mitsuo; Kikuchi, Yoshimi; and Ichino, Nobuyuki, to Mamiya Koki Kabushiki Kaisha. Automatic focusing device. 4,382,665, Cl. 354-25.000.

Eickel, Rolf: *See—*
Krobel, Heinz; Bruch, Roland; Eickel, Rolf; Muller, Jurgen; Farber, Heinrich; and Bauer, Gunther, 4,383,329, Cl. 378-166.000.

Eilerman, Robert G.: *See—*
Willis, Brian J.; Fischetti, Frank, Jr.; and Eilerman, Robert G., 4,382,972, Cl. 426-536.000.

Einhorn, Arthur J.: *See—*
Barry, James D.; and Einhorn, Arthur J., 4,383,318, Cl. 372-6.000.

Eisen, Yossi; Shamai, Yair; Ovadia, Even; and Faermann, Sergio. Neutron dosimeter. 4,383,179, Cl. 250-472.100.

Electro Audio Dynamics, Inc.: *See—*
von Recklinghausen, Daniel R., 4,383,134, Cl. 179-1.00D.

Electro-Petroleum, Inc.: *See—*
Bell, Christy W.; Titus, Charles H.; and Pogontchef, Robert Y., 4,382,341, Cl. 34-1.000.
Bell, Christy W.; Titus, Charles H.; and Wittle, John K., 4,382,469, Cl. 166-248.000.

Electrochemische Energieconversie, NV: *See—*
Spaepen, Gustaaf J. F., 4,383,010, Cl. 429-42.000.

Eli Lilly and Company: *See—*
Flom, Merlyn G., 4,382,960, Cl. 424-358.000.
Lunn, William H. W.; and Wheeler, William J., 4,382,931, Cl. 424-246.000.
Lunn, William H. W.; and Wheeler, William J., 4,382,932, Cl. 424-246.000.

Ellestad, Everett. Motor mount for canoes. 4,382,574, Cl. 248-641.000.

Ellis, James S.: *See—*
Harben, Grover S., Jr.; Ellis, James S.; and Emmett, Joe M., 4,382,313, Cl. 17-11.000.

Ellis, Robert S., deceased (by Ellis, Virginia A., executrix), to Wean United, Inc. Electrical control circuits for flash welders. 4,383,162, Cl. 219-100.000.

Ellis, Virginia A., executrix: *See—*
Ellis, Robert S., deceased, 4,383,162, Cl. 219-100.000.

Elwood, Edward C.: *See—*
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,382,581, Cl. 254-134.3FT.

Emerson Electric Co.: *See—*
Ballas, George C., Sr.; and Mitchell, Albert W., 4,382,356, Cl. 56-12.700.
Hess, George E.; Donnelly, Donald E.; and Reinwart, Robert E., 4,382,433, Cl. 126-113.000.

Emhart Industries, Inc.: *See—*
Voland, Elmo W., 4,382,689, Cl. 368-76.000.

Emmett, James R., to Northern Engineering Industries Ltd. Regeneration of ion exchange materials. 4,383,046, Cl. 521-26.000.

Emmett, Joe M.: *See—*
Harben, Grover S., Jr.; Ellis, James S.; and Emmett, Joe M., 4,382,313, Cl. 17-11.000.

Endo, Hiroshi, to Nissan Motor Company, Limited. Obstacle detector for a vehicle. 4,383,238, Cl. 340-32.000.

Endoh, Noboru: *See—*
Kinoshita, Tatsuo; Oguchi, Yutaka; Maruhashi, Kenji; Kojima, Ichiro; Endoh, Noboru; and Satoh, Tetsuo, 4,383,110, Cl. 536-28.000.

Energy Conversion Devices, Inc.: *See—*
Marshall, Gerald F., 4,382,675, Cl. 355-70.000.

Energy Research Corporation: *See—*
Chi, Chang V., 4,383,008, Cl. 429-38.000.

Engeler, William E.: *See—*
Vogelsong, Thomas L.; and Engeler, William E., 4,383,187, Cl. 377-57.000.

Engelhard Corporation: *See—*
Gratzel, Michael; Kiwi, John; Kalyanasundaram, Kuppuswamy; and Philp, John, 4,382,846, Cl. 204-157.10R.

English Electric Valve Company Limited: *See—*
Ashton, John E. U., 4,383,169, Cl. 250-213.0VT.

Enoshima, Toshio; Furuhashi, Shoji; and Tamura, Hideyuki, to Nissan Motor Company, Limited. Spark timing system for spark ignition internal combustion engine. 4,382,429, Cl. 123-425.000.

Envirogenics Systems Company: *See—*
Sweeny, Keith H., 4,382,865, Cl. 210-743.000.

Epsom, Robert L., to Motorola, Inc. Intermodulation cancelling mixer. 4,383,334, Cl. 455-295.000.

Erard, Raoul H., to Ebauches, S.A. Ultra-flat electronic watch. 4,382,690, Cl. 368-77.000.

Erickson, Bert K., to General Electric Company. AM Radio having an automatic fine tuning circuit. 4,383,333, Cl. 455-182.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Roess, Dieter; and Hartig, Wolfgang, 4,383,181, Cl. 250-573.000.

Esser, Klaus: *See*—
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, 4,383,055, Cl. 523-221.000.
ETA A.G. Ebauches Fabrik: *See*—
Giger, Urs; and Perucchi, Norberto, 4,382,686, Cl. 368-187.000.
Ethyl Corporation: *See*—
Kao, James T. F.; and Marlett, Everett M., 4,383,117, Cl. 548-531.000.
Leavitt, Richard I., 4,383,038, Cl. 435-107.000.
Leavitt, Richard I., 4,383,039, Cl. 435-107.000.
Ethyl Products Company: *See*—
Ostrowsky, Efrem M., 4,382,521, Cl. 215-307.000.
Eto, Goro, to Futaba Denshi Kogyo K.K. Method of manufacturing a control grid for fluorescent display tube. 4,383,164, Cl. 219-121.0LD.
Eto, Goro: *See*—
Tanaka, Kazunori; Toki, Hitoshi; Miyazawa, Hisashi; and Eto, Goro, 4,382,979, Cl. 427-68.000.
Ets Albert S.A.: *See*—
Albert, Marcel; Fortin, Joseph; and Parenteau, Robert, 4,382,321, Cl. 28-145.000.
Ets. Francois Salomon et Fils, S.A.: *See*—
Salomon, Georges P. J., 4,382,611, Cl. 280-615.000.
Ettenberg, Michael, to RCA Corporation. Optical recording medium and information record with indented overcoat. 4,383,311, Cl. 369-275.000.
Ewing, Lloyd: *See*—
Schmit, Frank L.; Redmon, David T.; and Ewing, Lloyd, 4,382,867, Cl. 210-754.000.
Ex-Cell-O Corporation: *See*—
Melnyk, William, 4,382,464, Cl. 165-76.000.
Exxon Research and Engineering Co.: *See*—
Lewis, Arthur M., 4,383,264, Cl. 346-140.00R.
Patton, Tad L., 4,383,067, Cl. 524-141.000.
F. L. Smidth & Co.: *See*—
Andersen, Knud T.; and Christensen, Erik C. P., 4,382,561, Cl. 241-121.000.
Svensson, Sven O., 4,382,558, Cl. 241-30.000.
Fa. Johannes Moller Hamburg GmbH & Co. KG: *See*—
Moller, Hermann, 4,382,723, Cl. 406-90.000.
Fabian, Wolfgang: *See*—
Kopineck, Hermann-Josef; Tappe, Wilhelm; and Fabian, Wolfgang, 4,382,374, Cl. 72-202.000.
Faermann, Sergio: *See*—
Eisen, Yossi; Shamai, Yair; Ovadia, Even; and Faermann, Sergio, 4,383,179, Cl. 250-472.100.
Fajt, John; and Neal, James V., Jr., to Xenell Corporation. Automated welding systems and methods. 4,382,322, Cl. 228-103.000.
Fannin, Eugene R.: *See*—
Coggins, Dolphus L.; Fannin, Eugene R.; and Gumbelevicius, John, 4,383,042, Cl. 436-5.000.
Farber, Heinrich: *See*—
Krobel, Heinz; Bruch, Roland; Eickel, Rolf; Muller, Jurgen; Farber, Heinrich; and Bauer, Gunther, 4,383,329, Cl. 378-166.000.
Farm Fresh Shrimp Corporation: *See*—
Dugan, Charles; and Dugan, Timothy, 4,382,423, Cl. 119-2.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Bernardi, Luigi; Bosisio, Germano; Mantegani, Sergio; Rossi, Alessandro; and Temperilli, Aldemio, 4,382,940, Cl. 424-261.000.
Farrington, Jeffrey G.: *See*—
Chown, Martin; and Farrington, Jeffrey G., 4,382,681, Cl. 356-350.000.
Farris, James W. Mail signal apparatus. 4,382,542, Cl. 232-35.000.
Federal Paper Board Company, Inc.: *See*—
Sutherland, Robert L.; and Holmes, George S., 4,382,505, Cl. 206-180.000.
Fernschild, Guenter: *See*—
Rudolph, Werner; and Fernschild, Guenter, 4,382,897, Cl. 260-544.00Y.
Ferris, Theodore V.; and Kmetz, Richard C., to Monsanto Company. Manufacture of aqueous formaldehyde. 4,383,123, Cl. 568-473.000.
Fessel, Rudolf, to Olympia Werke AG. Memory typewriters with interchangeable typing element. 4,382,702, Cl. 400-144.200.
Fester, Walter; Huber, Bernd; and Schmidt, Gerhard, to Hoechst Aktiengesellschaft. Filaments and fibers of acrylonitrile copolymer mixtures. 4,383,086, Cl. 525-238.000.
Fette, Frank E. Photography lighting system. 4,383,287, Cl. 362-18.000.
Feuerherm, Harald. Apparatus for controlling wall thickness in extruded tubular synthetic resin blank. 4,382,766, Cl. 425-465.000.
Feurer, Bernard, to Alcon Pharmaceuticals Limited. Method for molding contact lenses using ultraviolet energy. 4,382,902, Cl. 264-1.400.
Fiamm Componenti Accessori S.p.A.: *See*—
Frigo, Domenico, 4,383,249, Cl. 340-384.00R.
Finike Italiana Marposs S.p.A.: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,382,338, Cl. 33-178.00E.
Firestone Tire & Rubber Company, The: *See*—
Lawson, David F.; Hayes, Robert A.; and Altenau, Alan G., 4,383,071, Cl. 524-432.000.
Fischer, Horst; Bunemann, Hermann; Henneken, Bernhard; and Kamerling, Bruno, to Kabel-u. Metallwerke Gutehoffnungshutte AG. Cooling plate for furnaces. 4,382,585, Cl. 266-190.000.
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., to United Technologies Corporation. Command-inhibited aircraft attitude reference adjustment. 4,383,299, Cl. 364-434.000.
Fischetti, Frank, Jr.: *See*—
Willis, Brian J.; Fischetti, Frank, Jr.; and Eilerman, Robert G., 4,382,972, Cl. 426-536.000.
Fives-Cail Babcock: *See*—
Pietryka, Joseph; Cazaux, Joel; and Guyot, Andre, 4,382,462, Cl. 164-426.000.
Fleitas, Arthur M., to Dualmatic Manufacturing Company. Four-wheel drive clutch. 4,382,495, Cl. 192-36.000.
Fletcher, Bruce G.: *See*—
Shields, Steven E.; and Fletcher, Bruce G., 4,382,658, Cl. 350-334.000.
Flom, Merlyn G., to Eli Lilly and Company. Cosmetic cleanser formulation. 4,382,960, Cl. 424-358.000.
Flowtec AG: *See*—
Hafner, Peter, 4,382,387, Cl. 73-861.170.
Flynn, John J.: *See*—
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,382,840, Cl. 156-623.00R.
FMC Corporation: *See*—
Thompson, John S., 4,382,971, Cl. 426-323.000.
Focke, Bernhard: *See*—
Focke, Heinz; and Focke, Bernhard, 4,382,575, Cl. 249-93.000.
Focke & Co.: *See*—
Focke, Heinz; and Focke, Bernhard, 4,382,575, Cl. 249-93.000.
Focke, Heinz; and Focke, Bernhard, to Focke & Co. Wedge shaped chute walls with bent ends for cigarette magazines. 4,382,575, Cl. 249-93.000.
Ford Aerospace & Communications Corporation: *See*—
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., 4,383,226, Cl. 333-33.000.
Ford Motor Company: *See*—
Mocarski, Stanislaw, 4,382,818, Cl. 419-11.000.
Forsman, William C.: *See*—
Vogel, F. Lincoln; and Forsman, William C., 4,382,882, Cl. 252-503.000.
Fortier, J. Paul. Combined book leaf holder and bookmark. 4,382,617, Cl. 281-42.000.
Fortin, Joseph: *See*—
Albert, Marcel; Fortin, Joseph; and Parenteau, Robert, 4,382,321, Cl. 28-145.000.
Foster-Miller Associates, Inc.: *See*—
Ludlow, Jonathan E.; Peake, Cecil V.; and Guay, Paul J., 4,382,633, Cl. 299-33.000.
Fox, Lawrence E.; Reinsma, Harold L.; and Woody, Albert L., to Towmotor Corporation. Material fracturing apparatus. 4,382,634, Cl. 299-37.000.
Foxboro Company, The: *See*—
Gilby, Anthony C., 4,382,656, Cl. 350-96.280.
Framatome: *See*—
Lafosse, Claude; and Lepetit, Jacques, 4,382,711, Cl. 403-290.000.
Frank, Donald N., to United States of America, Energy. Head assembly for multiposition borehole extensometer. 4,382,335, Cl. 33-125.00B.
Frank, Ed, to Boeing Company, The. Bi-directional applicator head. 4,382,836, Cl. 156-459.000.
Frank, Paul D.: *See*—
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., 4,383,226, Cl. 333-33.000.
Fraunhofer-Gesellschaft zur Forderung der angewandten: *See*—
Chmiel, Horst; and Hellwig, Gunter, 4,382,913, Cl. 423-230.000.
Fredericks, Victor L.; and Bray, Muriel E. Safety flotation device for aircraft. 4,382,567, Cl. 244-107.000.
Freeman, James G.: *See*—
Adeboi, Frans L.; and Freeman, James G., 4,382,861, Cl. 210-497.200.
Freeman, Sandra D. Display box assembly. 4,382,344, Cl. 40-539.000.
Freeman, Willie B.: *See*—
Cromer, Charles F.; and Freeman, Willie B., 4,383,150, Cl. 200-144.0AP.
Freitag, Dieter: *See*—
Rudolph, Udo; Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, 4,382,898, Cl. 260-544.00D.
Freller, Robert T. Custom dental shade guide selector and method for its use. 4,382,784, Cl. 433-26.000.
French, James C.: *See*—
Bloem, Russell J.; Bunge, Richard H.; and French, James C., 4,382,952, Cl. 424-279.000.
French Jewellery Company of Canada Limited: *See*—
Manolescu, Dorin T., 4,383,002, Cl. 428-580.000.
Frias, Robert, to Ingram Corporation. Pipe handling system. 4,382,738, Cl. 414-22.000.
Fricker, Richard, to A.G. (Patents) Limited. Fermentation process and apparatus. 4,383,040, Cl. 435-161.000.
Friebe, Walter-Gunar: *See*—
Winter, Werner; Friebe, Walter-Gunar; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,382,943, Cl. 424-267.000.
Friedlander, Sheldon K.: *See*—
Sinha, Mahadeva P.; Giffin, Charles E.; Norris, David D.; and Friedlander, Sheldon K., 4,383,171, Cl. 250-282.000.
Friedrich Kocks GmbH & Co.: *See*—
Brauer, Hans; and Demny, Werner, 4,382,376, Cl. 72-205.000.
Frigo, Domenico, to Fiamm Componenti Accessori S.p.A. Audible warning device for motor vehicles. 4,383,249, Cl. 340-384.00R.
Frister, Manfred, to Robert Bosch GmbH. Direct-current, self-contained, mobile power supply system. 4,383,215, Cl. 322-63.000.
Fritsch, Rudolf, to Automatik Apparate-Maschinebau H. Hench GmbH. Device for filtering liquid of high viscosity supplied under

pressure, in particular a device that can be connected to an extruder to filter thermoplastic melts of plastic composition. 4,382,860, Cl. 210-431.000.

Fritzsche Dodge & Olcott Inc.: *See*—
Willis, Brian J.; Fischetti, Frank, Jr.; and Eilerman, Robert G., 4,382,972, Cl. 426-536.000.

Frohberger, Paul-Ernst: *See*—
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,382,933, Cl. 424-248.400.
Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, 4,382,944, Cl. 424-269.000.

Froumajou, Armand, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Convertible seat structure for an automobile vehicle. 4,382,629, Cl. 297-322.000.

Fuji Electrochemical Co., Ltd.: *See*—
Torii, Michihiro; Kihara, Utsuo; Goto, Hirohito; and Sasaki, Isamu, 4,382,839, Cl. 156-616.00R.

Fuji Kiko Kabushiki Kaisha: *See*—
Yamamura, Mitsuzi, 4,382,320, Cl. 24-230.00A.

Fuji Photo Film Co., Ltd.: *See*—
Harada, Shigeo, 4,383,278, Cl. 358-285.000.
Inuiya, Masafumi, 4,383,274, Cl. 358-227.000.
Ishikawa, Takatoshi; Morigaki, Masakazu; Nakamura, Takashi; and Furutate, Nobuo, 4,383,027, Cl. 430-372.000.
Noguchi, Masaru, 4,383,262, Cl. 346-1.100.

Fujihara, Mikiharu: *See*—
Kutsusawa, Tadashi; Shirane, Hideo; Fujihara, Mikiharu; and Hisada, Hideho, 4,383,041, Cl. 435-291.000.

Fujii, Tsuneo: *See*—
Hattori, Shuzo; Morita, Shinzo; and Fujii, Tsuneo, 4,382,985, Cl. 427-41.000.

Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Cooling system in a liquid cooled internal combustion engine. 4,382,426, Cl. 123-41.100.

Fujiki, Kuniharu, to Victor Company of Japan, Limited. Magnetic recording medium. 4,383,000, Cl. 428-522.000.

Fujiki, Kuniharu, to Victor Company of Japan, Limited. Magnetic recording medium. 4,383,001, Cl. 428-522.000.

Fujimaki, Tatsuo; Yamaguchi, Shinsuke; Yamada, Tomoharu; and Tomita, Seisuke, to Bridgestone Tire Co., Ltd. Rubber composition for tire. 4,383,085, Cl. 525-196.000.

Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kawai, Kiyohisa, to Takeda Chemical Industries, Ltd. Tetrapeptide acylhydrazides, their production and use. 4,382,923, Cl. 424-177.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Teraji, Tsutomu; Oku, Teruo; and Namiki, Takayuki, 4,382,934, Cl. 424-250.000.

Fujita, Masanori, to Seikosha Co., Ltd. Electronic timepiece. 4,382,697, Cl. 368-240.000.

Fujitsu Fanuc Limited: *See*—
Obara, Haruki, 4,383,160, Cl. 219-69.00W.

Fujitsu Limited: *See*—
Kawase, Nobuo; and Aigo, Masayoshi, 4,382,776, Cl. 432-9.000.

Fujiwara, Akiko; Hoshino, Tatsuo; and Sekine, Yuzuru, to Hoffmann-La Roche Inc. Process to produce anthracycline glycosides. 4,383,037, Cl. 435-78.000.

Fujizoki Pharmaceutical Co., Ltd.: *See*—
Kutsusawa, Tadashi; Shirane, Hideo; Fujihara, Mikiharu; and Hisada, Hideho, 4,383,041, Cl. 435-291.000.

Fukino, Kunihiro; Saito, Yukio; and Shiokama, Yoshiharu, to Nippon Kogaku K.K. Signal transmission device in an intermediate lens barrel. 4,382,671, Cl. 354-286.000.

Fukuhara, Kenichi: *See*—
Murao, Sawao; and Fukuhara, Kenichi, 4,382,888, Cl. 260-112.50R.

Fukuta, Katsuyoshi: *See*—
Matsumura, Sadao; Fukuta, Katsuyoshi; and Hirano, Hitoshi, 4,383,174, Cl. 250-338.000.

Fulton, Edward, to Eaton Corporation. Push-button switch with improved rocking contactor switch mechanism. 4,383,149, Cl. 200-68.000.

Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, to Hitachi, Ltd.; and Nippon Engelhard, Ltd. Material for adsorbing iodine and method for preparing thereof. 4,382,879, Cl. 252-457.000.

Furminger, Ronald J., to Radiochemical Centre Ltd., The. Container system for dangerous materials. 4,382,512, Cl. 206-446.000.

Furuhashi, Shoji: *See*—
Enoshima, Toshio; Furuhashi, Shoji; and Tamura, Hideyuki, 4,382,429, Cl. 123-425.000.

Furusawa, Takashi, to Sharp Kabushiki Kaisha. Control circuit for controlling a magnetron of a microwave oven. 4,383,156, Cl. 219-10.55B.

Furutate, Nobuo: *See*—
Ishikawa, Takatoshi; Morigaki, Masakazu; Nakamura, Takashi; and Furutate, Nobuo, 4,383,027, Cl. 430-372.000.

Fussl, Erwin, to Maerz Ofenbau AG. Regenerative shaft furnace for burning carbonate-containing raw materials. 4,382,779, Cl. 432-25.000.

Futaba Denshi Kogyo K.K.: *See*—
Eto, Goro, 4,383,164, Cl. 219-121.0LD.
Tanaka, Kazunori; Toki, Hitoshi; Miyazawa, Hisashi; and Eto, Goro, 4,382,979, Cl. 427-68.000.

Futagami, Mikio: *See*—
Yuyama, Masahiro; and Futagami, Mikio, 4,382,983, Cl. 427-386.000.

G. Rau GmbH & Co.: *See*—
Spengler, Heinz, 4,383,004, Cl. 428-619.000.

Gabard, Danial: *See*—
Le Penven, Yves; and Gabard, Danial, 4,382,535, Cl. 228-262.000.

Gafcel Industries, Inc.: *See*—
Gaffney, William, 4,382,510, Cl. 206-396.000.

Gaffney, William, to Gafcel Industries, Inc. Roll dispensing container. 4,382,510, Cl. 206-396.000.

Gafford, Alexander T.; and Adams, Charles E., to Allis-Chalmers Corporation. Planter hopper with wear ring. 4,382,528, Cl. 222-367.000.

Gaia, Aldino J.: *See*—
Urani, Angelo; and Gaia, Aldino J., 4,383,236, Cl. 337-403.000.

Gailey, J. Lynn; and Wollam, Carl A., to Alcan Aluminum Corporation. Siding panel systems with panel-mounting devices. 4,382,354, Cl. 52-521.000.

Gaillard, Jean, to Telecommunications Radioelectriques et Telephoniques T.R.T. Filter device comprising switched-capacitance integrating networks. 4,383,228, Cl. 333-173.000.

Gall, John C., to Sears, Roebuck and Co. Lamp shade assembly kit. 4,383,291, Cl. 362-352.000.

Gallmann, Ernst, to Kibag Aktiengesellschaft Baggerei-Unternehmungen & Kieswerke am Zurichsee. Process for preparing a bituminous ground covering. 4,382,988, Cl. 428-222.000.

Galvin, Aaron A., to American District Telegraph Company. System for intrusion detection. 4,383,250, Cl. 340-521.000.

Gardner, Frank N. Fish hook setting device. 4,382,346, Cl. 43-15.000.

Garrison, Maurice R.; and Stachura, Victor J., to American Precision Industries Inc. Heat exchanger of the tube and plate type. 4,382,467, Cl. 165-159.000.

Gasper, Alton J.; and Wells, James N., to Minnesota Mining and Manufacturing Company. Extension of polyurethane hydrogel cure time. 4,383,079, Cl. 524-767.000.

Gasper, Bertram: *See*—
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,382,358, Cl. 57-243.000.

Gateau, Patrick: *See*—
Gatellier, Claude; Plessis, Andree; Gateau, Patrick; and Durand, Jean-Pierre, 4,382,873, Cl. 252-312.000.

Gatellier, Claude; Plessis, Andree; Gateau, Patrick; and Durand, Jean-Pierre, to Institut Francais du Petrole. Dispersant and biodegradant formulations for treating hydrocarbon-polluted waters. 4,382,873, Cl. 252-312.000.

Gates Rubber Company, The: *See*—
McClelland, Donald H.; Uba, Toshio; and Ching, Larry K. W., 4,383,011, Cl. 429-54.000.

Gaulliard, Jean-Michel: *See*—
Abblard, Jean; Gaulliard, Jean-Michel; and Lacroix, Guy, 4,382,928, Cl. 424-211.000.

Gaumer, Lee S., to Air Products and Chemicals, Inc. Air separation process with single distillation column for combined gas turbine system. 4,382,366, Cl. 62-31.000.

Gelens, Johannes R.: *See*—
Van Zon, Adrianus J. H. J.; and Gelens, Johannes R., 4,383,200, Cl. 315-57.000.

Gemmell, David; Longley, Anthony; and Irvine, Duncan. Control apparatus for a display matrix. 4,383,254, Cl. 340-712.000.

Gemmill, Robert M., Jr.: *See*—
Horodysky, Andrew G.; Landis, Phillip S.; and Gemmill, Robert M., Jr., 4,382,869, Cl. 252-47.500.

General Electric: *See*—
Saad, William T.; and Stodgell, Robert F., 4,383,062, Cl. 524-35.000.

General Electric Company: *See*—
Beck, Charles E.; and Kadlec, Richard T., 4,383,202, Cl. 315-200.00A.
Erickson, Bert K., 4,383,333, Cl. 455-182.000.
Ko, Allen W.; and Starr, John B., Jr., 4,383,092, Cl. 526-62.000.
Lee, Gim F., Jr., 4,383,082, Cl. 525-92.000.
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,383,003, Cl. 428-611.000.
Murphy, Harold R., 4,383,007, Cl. 429-1.000.
Roberts, Victor D., 4,383,204, Cl. 315-291.000.
Stocking, George E., 4,382,369, Cl. 62-280.000.
Vogelsong, Thomas L.; and Engeler, William E., 4,383,187, Cl. 377-57.000.
Wang, Jish M., 4,382,382, Cl. 73-304.00R.

General Electric Company Limited, The: *See*—
Dudek, Michael T.; and Robinson, John M., 4,383,324, Cl. 375-76.000.

General Foods Corporation: *See*—
Klose, Robert E.; and Sjonvall, Ragnar E., 4,382,963, Cl. 426-3.000.

General Motors Corporation: *See*—
Brown, Trevor J.; and Hakken, Neal S., 4,382,635, Cl. 301-37.0TP.
Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,382,323, Cl. 29-157.00R.
Chronowski, Thomas G.; and Wendler, Paul O., 4,382,756, Cl. 418-133.000.
Dearlove, Thomas J.; and Gray, Richard K., 4,383,060, Cl. 523-429.000.
Liggett, Allen C.; and Toruk, Nicholas, 4,382,312, Cl. 16-365.000.

General Tire & Rubber Company, The: *See*—
Kuan, Tiong H., 4,383,074, Cl. 524-496.000.

Geological Research Corporation: *See*—
Arbiter, Nathaniel, 4,382,856, Cl. 209-10.000.

Geopfarth, Robert N., to United States of America, Navy. Multiple scanivalve control device. 4,383,300, Cl. 364-558.000.
George Fischer Limited: *See*—
Henych, Ivo, 4,382,828, Cl. 148-3.000.
George, Pascal: *See*—
Kaplan, Jean-Pierre; and George, Pascal, 4,382,938, Cl. 424-256.000.
Gesellschaft zur Forderund der Forschung an der Eidgenossischen Technischen Hochschule: *See*—
Stofer, Bernard, 4,382,910, Cl. 422-62.000.
Gestaut, Lawrence J.; and Solomon, Frank, to Diamond Shamrock Corporation. Electrode backing layer and method of preparing. 4,382,904, Cl. 264-49.000.
Getfresh Food Limited: *See*—
Sorensen, Torben, 4,382,970, Cl. 426-275.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Grisebach, Hans-Theodor, 4,382,618, Cl. 285-137.00R.
Grisebach, Hans-Theodor, 4,382,619, Cl. 285-137.00R.
Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., to Millicom Incorporated. Message communication system with message storage. 4,383,257, Cl. 340-825.470.
Gibson, Stuart M., III, to Software Concepts, Inc. Spelling error detector apparatus and methods. 4,383,307, Cl. 364-900.000.
Giddings, Rodney M.: *See*—
Tissington, Peter; Giddings, Rodney M.; and Pearse, Michael T., 4,382,894, Cl. 260-465.00D.
Giffin, Charles E.: *See*—
Sinha, Mahadeva P.; Giffin, Charles E.; Norris, David D.; and Friedlander, Sheldon K., 4,383,171, Cl. 250-282.000.
Giger, Urs; and Perucchi, Norberto, to ETA A.G. Ebauches Fabrik. Quartz watch with analogical time display, comprising a manually controlled time altering device. 4,382,686, Cl. 368-187.000.
Gilbert Manufacturing Co., Inc.: *See*—
Schick, Henry, 4,382,654, Cl. 339-176.00L.
Gilby, Anthony C., to Foxboro Company, The. Non-imaging optical energy transfer system. 4,382,656, Cl. 350-96.280.
Gillette, Robert H., to Brammall, Inc. Honing stones. 4,382,350, Cl. 51-206.500.
Gillio-Tos, Mario: *See*—
Schirmer, Henry G.; and Gillio-Tos, Mario, 4,382,513, Cl. 206-484.000.
Girard, Theodore A.: *See*—
Davis, Thomas B.; and Girard, Theodore A., 4,382,799, Cl. 8-107.000.
Girling Limited: *See*—
Thomas, Alfred W.; and Harrison, Anthony W., 4,382,364, Cl. 60-567.000.
Giuffrida, Eric R.: *See*—
Cusick, Timothy H.; and Giuffrida, Eric R., 4,382,602, Cl. 273-256.000.
Glacier Metal Company Limited, The: *See*—
Davies, Glyndwr J., 4,383,069, Cl. 524-299.000.
Glance, Bernard; and Henry, Paul S., to Bell Telephone Laboratories, Incorporated. High capacity digital mobile radio system. 4,383,332, Cl. 455-33.000.
Glaxo Group Limited: *See*—
Bradshaw, John; Judd, Duncan B.; Price, Barry J.; and Clitherow, John W., 4,382,929, Cl. 424-246.000.
Glendinning, Kenneth P. Silage handling system. 4,382,498, Cl. 193-34.000.
Glucksman, Dov Z. Hair roller. 4,382,447, Cl. 132-33.00R.
Glyco Chemicals, Inc.: *See*—
Davis, Thomas B.; and Girard, Theodore A., 4,382,799, Cl. 8-107.000.
Gmeinder, Hermann; and Beier, Stefan, to Kaltenbach & Voight GmbH & Co. Drive control circuit for dental treatment instruments. 4,383,167, Cl. 377-2.000.
Gniewek, Stephen A.: *See*—
Van Wormer, William D., Jr.; Gniewek, Stephen A.; and Schlotterbeck, David L., 4,382,808, Cl. 55-418.000.
Godkin, Mikhail: *See*—
Yatsushiro, Kenji; and Godkin, Mikhail, 4,383,234, Cl. 335-253.000.
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., to Union Carbide Corporation. Process for the preparation of high density ethylene polymers in fluid bed reactor. 4,383,095, Cl. 526-88.000.
Goldammer, Georg; and Mahrt, Gunter, to Schubert & Salzer, Maschinenfabrik Aktiengesellschaft. Apparatus for opening bales of fiber. 4,382,315, Cl. 19-81.000.
Goldammer, Georg; Mahrt, Gunter; and Dammig, Joachim, to Schubert & Salzer, Maschinenfabrik Aktiengesellschaft. Method and apparatus for opening and mixing fiber bales. 4,382,316, Cl. 19-81.000.
Goldberg, Mark W., to United States of America, National Security Agency. Method for laser recording utilizing dynamic preheating. 4,383,261, Cl. 346-1.100.
Goldstein, Edwin W., to Crown Marking Equipment Co. Plastic mount for a stamping die. 4,382,407, Cl. 101-405.000.
Golinelli, Guido: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,382,338, Cl. 33-178.00E.
Gollmer, Klaus-Dieter: *See*—
Neubold, Kurt; and Gollmer, Klaus-Dieter, 4,382,876, Cl. 252-435.000.
Goodman, Harold. Telephone receiver holding device. 4,383,140, Cl. 179-149.000.
Goodyear Aerospace Corporation: *See*—
Uram, John, Jr., 4,382,832, Cl. 156-99.000.
Goodyear Tire & Rubber Company, The: *See*—
Castner, Kenneth F.; and Sandstrom, Paul H., 4,383,097, Cl. 526-133.000.
Cohn, Alan E., 4,382,830, Cl. 156-64.000.
Tung, William C. T., 4,383,106, Cl. 528-295.300.
Gordon, Bertram I., to L. Gordon & Sons, Inc. Method and apparatus for assembling, shipping and testing sensitive electronic components. 4,382,509, Cl. 206-331.000.
Gordon, Robert L.: *See*—
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,382,767, Cl. 425-504.000.
Gotaverken Anteknik AB: *See*—
Sjoholm, Bertil H., 4,383,163, Cl. 219-107.000.
Goto, Fumio: *See*—
Sato, Yo; Abe, Norio; Kikuchi, Suguru; Goto, Fumio; and Sugimoto, Akira, 4,382,835, Cl. 156-384.000.
Goto, Hirohito: *See*—
Torii, Michihiro; Kihara, Utsuo; Goto, Hirohito; and Sasaki, Isamu, 4,382,839, Cl. 156-616.00R.
Goto, Takao: *See*—
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Goudie, Alexander C., to Beecham Group Limited. Naphthalene derivatives, a process for their preparation and their use in anti-inflammatory pharmaceutical compositions. 4,382,959, Cl. 424-331.000.
Gough, Stanley T. D., to Rhone-Poulenc Agrochimie. 5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoyl derivatives of imino-dithiolanes. 4,382,815, Cl. 71-90.000.
Graham, Kenneth Z. Poultry eviscerator with movable work cylinder. 4,382,314, Cl. 17-11.000.
Grandjean, Pierre-Andre; Cadman, Martyn-Andrew; Vuilleumier, Raymond; and Guye, Raymond, to Centre Electronique Horloger S.A. Miniature display device. 4,383,255, Cl. 340-764.000.
Gras, Rainer: *See*—
Wolf, Elmar; and Gras, Rainer, 4,383,076, Cl. 524-589.000.
Grassberger, Maximilian; and Petranyi, Gabor, to Sandoz Ltd. Benzopyrane and benzothiopyrane derivatives useful as anti-mycotic agents. 4,382,951, Cl. 424-275.000.
Gratzel, Michael; Kiwi, John; Kalyanasundaram, Kuppuswamy; and Philp, John, to Engelhard Corporation. Simultaneous production of hydrogen and oxygen from water. 4,382,846, Cl. 204-157.10R.
Gray, Richard K.: *See*—
Dearlove, Thomas J.; and Gray, Richard K., 4,383,060, Cl. 523-429.000.
Green, Daniel R., to Union Tank Car Company. Hopper discharge arrangement. 4,382,724, Cl. 406-130.000.
Green, George E.; and Irving, Edward, to Ciba-Geigy Corporation. Photopolymerization by means of sulfoxonium salts. 4,383,025, Cl. 430-280.000.
Greenterior Co., Ltd., The: *See*—
Kitsu, Seiki; Yanagisawa, Masayasu; and Kobayashi, Hitoshi, 4,382,348, Cl. 47-59.000.
Gregg, David W., to United States of America, Energy. Solar retorting of oil shale. 4,382,850, Cl. 208-11.00R.
Gregory, Charles A.: *See*—
Harris, Charles W.; and Gregory, Charles A., 4,383,302, Cl. 364-565.000.
Grevenstuk, Garth A.: *See*—
Jensen, James W.; Miller, Stanley J.; Heniser, Eugene W.; Dalman, Donald P.; and Grevenstuk, Garth A., 4,382,737, Cl. 413-56.000.
Grilli, Walter: *See*—
Lunardi, Alceste; Villani, Mauro; and Grilli, Walter, 4,382,741, Cl. 414-403.000.
Grinstead, Robert R., to Dow Chemical Co., The. Metallurgical extractant system. 4,382,872, Cl. 252-189.000.
Grisebach, Hans-Theodor, to Gewerkschaft Eisenhutte Westfalia. Hydraulic coupling device. 4,382,618, Cl. 285-137.00R.
Grisebach, Hans-Theodor, to Gewerkschaft Eisenhutte Westfalia. Hydraulic coupling device. 4,382,619, Cl. 285-137.00R.
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 2-methylene-3-substituted-4,5-bis-trifluoromethyl-iminothiazolidines. 4,382,933, Cl. 424-248.400.
Gronborg, Jan L.; and Persson, Lars E. Ice skate guard. 4,382,615, Cl. 280-825.000.
Grosjean, Jean-Claude: *See*—
Vayssiere, Pierre; and Grosjean, Jean-Claude, 4,382,817, Cl. 75-59.000.
Gross, Thomas D.; and Jagger, Brian E., to Xerox Corporation. Print element shifter. 4,382,703, Cl. 400-257.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Cationic acrylamide chemically modified asphalts. 4,383,081, Cl. 525-54.500.
Grossman, Richard C. Dental appliance. 4,382,781, Cl. 433-17.000.
Grumman Aerospace Corporation: *See*—
Boppe, Charles W.; and Harvie, Stuart G., 4,382,569, Cl. 244-199.000.
GTE Automatic Electric Laboratories, Inc.: *See*—
Lee, Man S., 4,383,305, Cl. 364-802.000.
GTE Products Corporation: *See*—
Bouchard, Andre C., 4,382,775, Cl. 431-362.000.
Brower, Boyd G., 4,382,774, Cl. 431-359.000.
Gungle, W. Calvin; Keeffe, William M.; and Work, Dale E., 4,383,197, Cl. 313-38.000.

Guay, Paul J.: *See*—
Ludlow, Jonathan E.; Peake, Cecil V.; and Guay, Paul J., 4,382,633, Cl. 299-33.000.

Gudnason, Geir V., to Coca Cola Company, The. Process for the purification of sugar syrups. 4,382,823, Cl. 127-57.000.

Guillaume, Jacques: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,382,942, Cl. 424-263.000.

Guininger, Barrett E., to Sony Corporation. Motor drive amplifier. 4,383,205, Cl. 318-254.000.

Gulf Research & Development Company: *See*—
Kehl, William L., 4,382,877, Cl. 252-437.000.
Kehl, William L., 4,382,878, Cl. 252-437.000.
Madgavkar, Ajay M.; and Swift, Harold E., 4,382,912, Cl. 423-224.000.

Gulf & Western Manufacturing Company: *See*—
Jensen, James W.; Miller, Stanley J.; Heniser, Eugene W.; Dalman, Donald P.; and Grevenstuk, Garth A., 4,382,737, Cl. 413-56.000.

Gumbelevicius, John: *See*—
Coggins, Dolphus L.; Fannin, Eugene R.; and Gumbelevicius, John, 4,383,042, Cl. 436-5.000.

Gungle, W. Calvin; Keeffe, William M.; and Work, Dale E., to GTE Products Corporation. Metal halide arc discharge lamp having shielded electrode. 4,383,197, Cl. 313-38.000.

Gupta, Amitava; Ingham, John D.; and Yavrouian, Andre H., to California Institute of Technology. Solar cell encapsulation. 4,383,129, Cl. 136-251.000.

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Khutoretsky, Garri M.; Ignatiev, Anatoly D.; Gurevich, Elrikh I.; Shurygin, Sergei Y.; Belova, Tamara N.; Azarov, Evgeny M., deceased; and Azarova, Ekaterina A., administrator, 4,383,190, Cl. 310-55.000.

Guye, Raymond: *See*—
Grandjean, Pierre-Andre; Cadman, Martyn-Andrew; Vuilleumier, Raymond; and Guye, Raymond, 4,383,255, Cl. 340-764.000.

Guyot, Andre: *See*—
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Haage, Hans-Jurgen: *See*—
Ucinhazska, Bruno; Disteldorf, Josef; Hubel, Werner; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,382,555, Cl. 239-714.000.

Haar, Gerhard: *See*—
Binder, Helmut; Haar, Gerhard; Schmid, Eckhardt; and Wirth, Hans-Joachim, 4,383,290, Cl. 362-290.000.

Haar, Thomas. Loading device for a machine tool, particularly for machining panels of sheet metal or other materials. 4,382,395, Cl. 83-71.000.

Haas, Paul A., to United States of America, Energy. Method for producing nuclear fuel. 4,382,885, Cl. 252-635.000.

Hafner, Peter, to Flowtec AG. Method of compensating the interference DC voltages in the electrode circuit in magnetic-conductive flow measurement. 4,382,387, Cl. 73-861.170.

Haga, Fumio: *See*—
Namiki, Ko; Iguchi, Tokio; Haga, Fumio; and Ishikawa, Masanobu, 4,382,389, Cl. 74-422.000.

Haga, Takahiro; Nishikawa, Tetsuji; Nakajima, Toshio; Minamida, Kohji; and Maeda, Masaru, to Ishihara Sangyo Kaisha Ltd. Process for producing 4-benzoylpyrazoles. 4,383,116, Cl. 548-367.000.

Hagelee, Leon A.: *See*—
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,383,081, Cl. 525-54.500.

Hager, I. Vincent. Solar window. 4,382,436, Cl. 126-429.000.

Hagiwara, Akio: *See*—
Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, 4,382,964, Cl. 426-7.000.

Hahn, Louis T.: *See*—
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,383,081, Cl. 525-54.500.

Hahn, Raymond M. Tree harvester. 4,382,457, Cl. 144-2.00Z.

Hajimichael, Agathangelos; Hopper, Sidney; and Smith, Peter K., to E M I Limited. Encapsulant material suitable for use under conditions of prolonged vacuum. 4,383,099, Cl. 528-60.000.

Hakala, Matti A.; Martikainen, Antti L. J.; and Auvinen, Jorma J., to Instrumentarium Oy. Method for separating water from a gas sample. 4,382,806, Cl. 55-18.000.

Hakken, Neal S.: *See*—
Brown, Trevor J.; and Hakken, Neal S., 4,382,635, Cl. 301-37.0TP.

Halene, Clemens, to Mannesmann Aktiengesellschaft. Method of making a light-weight, two-wheel set. 4,382,324, Cl. 29-168.000.

Hall, Charles P.; and Philipson, Joseph, to Monterey Manufacturing Company. Self-sealing waterbed mattress. 4,382,305, Cl. 5-451.000.

Hall, Dale R.; and Bush, Charles N., to B. F. Goodrich Company, The. Process for making low density chlorinated polyvinyl chloride foam. 4,383,048, Cl. 521-85.000.

Hall, Thomas M., to Bell Telephone Laboratories, Incorporated. Accelerated particle lithographic processing and articles so produced. 4,383,026, Cl. 430-325.000.

Halleck, Frank E., to American Sterilizer Company. Method for disinfecting and cleaning contact lenses. 4,382,824, Cl. 134-1.000.

Halpern, Peter H.; Toy, James W.; and Patisaul, Charles R., to Harris Corporation. Combined use of PN sequence for data scrambling and frame synchronization in digital communication systems. 4,383,322, Cl. 375-1.000.

Hamar, Martin R. Apparatus and process for sweeping a flat optical light plane. 4,382,680, Cl. 356-247.000.

Hamelin, Benoit; and Constant, Brigitte, to Brasseries Kronenbourg S.A. Package with surrounding binder. 4,382,511, Cl. 206-427.000.

Hammann, Ingeborg: *See*—
Maurer, Fritz; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,382,947, Cl. 424-273.00P.

Hammoud, Ezzat A.: *See*—
Klem, John E.; Hammoud, Ezzat A.; and Nelson, Daniel E., 4,382,744, Cl. 414-712.000.

Han, Ching C.: *See*—
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., 4,383,226, Cl. 333-33.000.

Hanada, Kazunori: *See*—
Tamai, Masaharu; Adachi, Takashi; Morimoto, Shigeo; Oguma, Ikyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,382,889, Cl. 260-112.50R.

Handelsbolaget Rodoverken: *See*—
Hellander, Karl A., 4,382,580, Cl. 254-89.00H.

Haneda, Hideo: *See*—
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Obtsuki, Masataka, 4,383,231, Cl. 335-146.000.

Hanna, Glenn W. Ingot mold. 4,382,576, Cl. 249-174.000.

Hansen, Karl A.; and Hendrickson, Iver G., to Boeing Company, The. Eddy current flow detection including compensation for system variables such as lift-off. 4,383,218, Cl. 324-225.000.

Hantel, Gerhard: *See*—
Naujoks, Manfred; and Hantel, Gerhard, 4,383,325, Cl. 376-381.000.

Harada, Shigeo, to Fuji Photo Film Co., Ltd. Light beam modulating-/deflecting system. 4,383,278, Cl. 358-285.000.

Harbaugh, Kenneth H. Coin wrapper cutting tool. 4,382,330, Cl. 30-124.000.

Harben, Grover S., Jr.; Ellis, James S.; and Emmett, Joe M., to Centennial Machine Co., Inc. Gizzard harvesting machine. 4,382,313, Cl. 17-11.000.

Hardesty, Lee H.: *See*—
Scott, Brian L.; and Hardesty, Lee H., 4,383,135, Cl. 179-1.0SD.

Harding, Steven R.; Lamos, Richard A.; and Roller, Donald C., to International Business Machines Corporation. Apparatus for collating sheets into sets and finishing thereof. 4,382,592, Cl. 270-53.000.

Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, to Kuraray Isoprene Chemical Co. Ltd.; and C. I. Kasei Co. Ltd. Water-swellable composite caulking material for preventing water leakage. 4,382,999, Cl. 428-494.000.

Harris, Charles W.; and Gregory, Charles A., to Power Systems & Controls, Inc. Microcomputer device having simultaneous input and output functions. 4,383,302, Cl. 364-565.000.

Harris Corporation: *See*—
Halpern, Peter H.; Toy, James W.; and Patisaul, Charles R., 4,383,322, Cl. 375-1.000.

Harris, Norman; Dennis, Alan J.; and Harrison, George E., to Davy McKee (Oil & Chemicals) Limited. Aldehyde-ethers. 4,383,125, Cl. 568-496.000.

Harris & Thrush Manufacturing Company: *See*—
Johnson, Don R., 4,382,631, Cl. 298-17.0SG.

Harrison, Anthony W.: *See*—
Thomas, Alfred W.; and Harrison, Anthony W., 4,382,364, Cl. 60-567.000.

Harrison, George E.: *See*—
Harris, Norman; Dennis, Alan J.; and Harrison, George E., 4,383,125, Cl. 568-496.000.

Hartig, Wolfgang: *See*—
Roess, Dieter; and Hartig, Wolfgang, 4,383,181, Cl. 250-573.000.

Harvie, Stuart G.: *See*—
Boppe, Charles W.; and Harvie, Stuart G., 4,382,569, Cl. 244-199.000.

Hashimoto, Masanori; Ishii, Yasuhiko; and Ohi, Yasuhiro, to Kurita Water Industries Ltd. Process for dewatering sludges. 4,382,864, Cl. 210-727.000.

Hashimoto, Morimasa: *See*—
Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, 4,382,879, Cl. 252-457.000.

Hashimoto, Shinichi: *See*—
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Hashimoto, Takeshi: *See*—
Nishihara, Koji; Hashimoto, Takeshi; Tanaka, Shunsaku; and Sato, Katsuhiko, 4,382,896, Cl. 260-505.00C.

Hashimoto, Teiji; Senuma, Michio; and Shimada, Fumio, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Focal plane shutter blade arrangement. 4,382,670, Cl. 354-246.000.

Hashimoto, Yasuyuki; and Shimizu, Kazuo, to Ancos Co., Ltd. Mechanical pencil. 4,382,706, Cl. 401-67.000.

Haskel Engineering and Supply Co.: *See*—
Kelly, John W., 4,382,379, Cl. 73-46.000.

Hastwell, Peter J. Flat plate heat exchanger modules. 4,382,468, Cl. 165-173.000.

Hattori, Shuzo; Morita, Shinzo; and Fujii, Tsuneo, to Daikin Kogyo Co., Ltd. Process for forming film of fluoroalkyl acrylate polymer on substrate and process for preparing patterned resist from the film. 4,382,985, Cl. 427-41.000.

Haupt, Robert C., to Allis-Chalmers Corporation. Deflectable support for protective frame. 4,382,613, Cl. 280-756.000.

Haville, George D., to BEI Electronics, Inc. Shaft angle encoder having a circuit for synthesizing a skipped track output signal. 4,383,317, Cl. 371-51.000.

Hawkins, Hubert A.: *See*—
Minnis, C. W.; Hawkins, Hubert A.; and Davis, Wendell, 4,382,591, Cl. 269-156.000.
Hawkins, William E., to Du Pont de Nemours, E. I., and Company. Cast web diversion. 4,382,396, Cl. 83-98.000.
Hawley, Charles C.; and Sieradzki, Benjamin, to Chemetron Process Equipment, Inc. Vacuum screw loader. 4,382,404, Cl. 99-472.000.
Hayakawa, Isao; Hiramitsu, Tokiyuki; and Tanaka, Yoshiaki, to Daiichi Seiyaku Co., Ltd. Benzoxazine derivatives. 4,382,892, Cl. 260-243.300.
Hayakawa, Masatoshi; and Tanioka, Masahiro, to CKD Corporation. Apparatus for sealing lamp mount to lamp tube. 4,382,645, Cl. 445-69.000.
Hayashi, Kazuya: *See*—
Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, 4,382,964, Cl. 426-7.000.
Hayes, Robert A.: *See*—
Lawson, David F.; Hayes, Robert A.; and Altenau, Alan G., 4,383,071, Cl. 524-432.000.
Hearn, Geoffrey. Gas bottle contents gauge. 4,382,478, Cl. 177-169.000.
Hegna, Hans O. Tilt steering of tandem wheeled or runner equipped vehicle. 4,382,605, Cl. 280-11.220.
Hehl, Karl. Safety cover for injection molding machine. 4,382,763, Cl. 425-153.000.
Hehl, Karl. Contact ledge for safety gate of injection molding machine. 4,382,764, Cl. 425-153.000.
Heinrich, Rainer: *See*—
Heinrich, Richard; and Heinrich, Rainer, 4,382,587, Cl. 267-160.000.
Heinrich, Richard; and Heinrich, Rainer, to KACO GmbH & Co. Vibration damping element. 4,382,587, Cl. 267-160.000.
Heinrich, Richard H. Desk storage device. 4,382,643, Cl. 312-195.000.
Hellander, Karl A., to Handelsbolaget Rodoverken. Lifting and shifting apparatus. 4,382,580, Cl. 254-89.00H.
Hellberg, Enar V., to Sunds Defibrator Aktiebolag. Defibrator. 4,382,559, Cl. 241-79.300.
Helling, Guenter: *See*—
Bergthaller, Peter; Helling, Guenter; and Strauss, Jurgen, 4,383,021, Cl. 430-213.000.
Hellwig, Gunter: *See*—
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Hemmings, Davis L., to United States of America, Army. Interchangeable fixed or damped towing system. 4,382,609, Cl. 280-415.00A.
Hendrickson, Iver G.: *See*—
Hansen, Karl A.; and Hendrickson, Iver G., 4,383,218, Cl. 324-225.000.
Hendrischk, Wolfgang, to Mannesmann Aktiengesellschaft. Friction drive in printers. 4,382,704, Cl. 400-585.000.
Heniser, Eugene W.: *See*—
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Henkel Kommanditgesellschaft auf Aktien: *See*—
Moller, Hinrich; Osberghaus, Rainer; and Budnowski, Manfred, 4,382,765, Cl. 424-365.000.
Henneken, Bernhard: *See*—
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Henry, Paul S.: *See*—
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Henry, S. Mark: *See*—
Alonso, Richard J.; Nersesian, Ara; Cotty, Val F.; and Henry, S. Mark, 4,382,919, Cl. 424-65.000.
Henslee, Walter W.; Morrow, Stanley J.; Lindsey, John S.; Christenson, Christopher P.; and Schwantje, Hans H., to Dow Chemical Company, The. Spinel surfaced objects. 4,382,997, Cl. 428-446.000.
Henson, William E.: *See*—
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Henych, Ivo, to George Fischer Limited. Chromium cast iron and method of producing same. 4,382,828, Cl. 148-3.000.
Hercules Incorporated: *See*—
Bankert, Ralph A., 4,383,077, Cl. 524-598.000.
Younkin, Harry A.; Mehnert, Gottfried; and Roos, Uwe V., 4,382,769, Cl. 425-525.000.
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, to Siemens Aktiengesellschaft. System for automatically controlling the breakdown voltage limit of an electrofilter. 4,382,805, Cl. 55-2.000.
Herman Miller, Inc.: *See*—
Propst, Robert L.; and Randolph, Travis M., 4,382,648, Cl. 339-18.00P.
Herr Manufacturing Company, Inc.: *See*—
McLean, James N., 4,382,357, Cl. 57-120.000.
Herrmann, Henry O., Jr., to AMP Incorporated. Anode connector. 4,382,650, Cl. 339-60.00R.
Hess, Dieter: *See*—
Daubenbuchel, Werner; and Hess, Dieter, 4,382,761, Cl. 425-140.000.
Hess, George E.; Donnelly, Donald E.; and Reinwart, Robert E., to Emerson Electric Co. Combined humidistat and electronic air flow responsive switch. 4,382,433, Cl. 126-113.000.
Hess, John E., II; and Braumuller, Robert C., to Conservolite, Inc. Adjustable light collector and sampler therefor. 4,383,288, Cl. 362-32.000.
Hesse, Robert L.: *See*—
Mickus, James C.; Hesse, Robert L.; and Pruitt, Gary L., 4,382,966, Cl. 426-69.000.
Hester, William A.: *See*—
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Hewlett-Packard Company: *See*—
Chu, David C.; and Offermann, Robert W., 4,383,166, Cl. 377-20.000.
Hicks, Roy T. Cooling and power input assembly. 4,383,286, Cl. 361-384.000.
Hightower, George H., Jr., to Thomaston Mills Inc. Snake proof chaps. 4,382,301, Cl. 2-22.000.
Higo, Moriaki; Kikuchi, Yasuo; Kitoh, Shinya; Suzuki, Shin-ichi; and Toda, Haruhiko, to Lion Corporation. 1-Methacryloxyethane-1,1-diphosphonic acid and its salts and dental adhesive composition containing same. 4,383,052, Cl. 523-118.000.
Hilti Aktiengesellschaft: *See*—
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Hiramitsu, Tokiyuki: *See*—
Hayakawa, Isao; Hiramitsu, Tokiyuki; and Tanaka, Yoshiaki, 4,382,892, Cl. 260-243.300.
Hirano, Hitoshi: *See*—
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Hirano, Tooichiro: *See*—
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Hirashima, Kunihiko, to Pioneer Electronic Corporation. Programmable bit shift circuit. 4,383,304, Cl. 364-715.000.
Hirata, Atsumi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,383,309, Cl. 369-77.000.
Hirata, Hitoshi: *See*—
Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, 4,383,136, Cl. 179-1.0GS.
Hirofumi, Shimizu; Akira, Yamano; and Shinzo, Ikeuchi, to Dainippon Screen Mfg., Ltd. Manufacturing method of stripe filter. 4,383,017, Cl. 430-7.000.
Hisada, Hideho: *See*—
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Hitachi, Ltd.: *See*—
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Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, 4,382,413, Cl. 105-163.00R.
Kuwabara, Takao; and Okumura, Hiroshi, 4,382,745, Cl. 415-1.000.
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,383,206, Cl. 318-445.000.
Nagayama, Hiroshi, 4,383,044, Cl. 501-108.000.
Oyama, Tadao; and Ohta, Takashi, 4,382,500, Cl. 198-346.000.
Shibata, Atsushi; and Koike, Takeshi, 4,383,178, Cl. 250-441.100.
Suefuji, Kazutaka; Arata, Tetsuya; Tomita, Yoshikatsu; Kotani, Sumihisa; Uchikawa, Naoshi; and Murayama, Akira, 4,382,370, Cl. 62-324.100.
Tomite, Tosio; Tajima, Humio; and Takamastu, Syuichi, 4,383,193, Cl. 310-154.000.
Hlinsky, Emil J.: *See*—
Synowiec, Stanislaw; and Hlinsky, Emil J., 4,382,734, Cl. 410-70.000.
Hoechst Aktiengesellschaft: *See*—
Fester, Walter; Huber, Bernd; and Schmidt, Gerhard, 4,383,086, Cl. 525-238.000.
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, 4,383,055, Cl. 523-221.000.
Weil, Joachim; and Sattelmeyer, Richard, 4,383,005, Cl. 428-625.000.
Hoesch Werke AG: *See*—
Kopineck, Hermann-Josef; Tappe, Wilhelm; and Fabian, Wolfgang, 4,382,374, Cl. 72-202.000.
Hoff, Raymond E.: *See*—
Pullukat, Thomas J.; and Hoff, Raymond E., 4,383,119, Cl. 556-412.000.
Shida, Mitsuzo; Pullukat, Thomas J.; and Hoff, Raymond E., 4,383,096, Cl. 526-129.000.
Hoffman, John P., to Caterpillar Tractor Co. Frequency signal conversion apparatus and method. 4,383,303, Cl. 364-565.000.
Hoffmann-La Roche Inc.: *See*—
Derungs, Romano, 4,382,945, Cl. 424-273.00R.
Fujiwara, Akiko; Hoshino, Tatsuo; and Sekine, Yuzuru, 4,383,037, Cl. 435-78.000.
Hoffmann, Ralph M., to Trochoid Power Corporation. Driveshaft arrangement for trochoidal rotary device. 4,382,755, Cl. 418-61.00A.
Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle construction. 4,382,554, Cl. 239-533.900.
Hogar S.r.l.: *See*—
Altissimo, Mario, 4,382,424, Cl. 119-158.000.
Holcombe, Wayne T.: *See*—
Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., 4,383,257, Cl. 340-825.470.
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., to Twin City International, Inc. Method and apparatus for measuring coating thicknesses on continuously moving material. 4,383,172, Cl. 250-308.000.

Holm, Charles H.: *See—*
Brandl, Michael C.; Holm, Charles H.; and Kataoka, David T., 4,382,482, Cl. 180-69.00R.

Holmes, George S.: *See—*
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Holywell Engineering Limited: *See—*
King, Norman S., 4,382,721, Cl. 405-288.000.

Holz, Dietrich, to Lucas Industries Limited. Adjuster strut for vehicle drum brake. 4,382,494, Cl. 188-79.50P.

Homac Mfg. Company: *See—*
Klosin, John J.; and McGrane, Eugene W., 4,382,651, Cl. 339-92.00R.

Homeyer, Bernhard: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
Namiki, Ko; Iguchi, Tokio; Haga, Fumio; and Ishikawa, Masanobu, 4,382,389, Cl. 74-422.000.

Honda, Yoshihiro, to Nippon Oil and Fats Co., Ltd. Antifouling paints having fumaric acid ester polymer. 4,383,053, Cl. 523-122.000.

Honeywell Inc.: *See—*
Pinckaers, B. Hubert, 4,382,770, Cl. 431-26.000.
Sikorra, Daniel J., 4,383,192, Cl. 310-154.000.
Szonntagh, Eugene L., 4,382,698, Cl. 374-37.000.

Honeywell Information Systems Inc.: *See—*
Miller, Robert C.; Bradley, John J.; Darden, Boyd E.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,383,295, Cl. 364-200.000.

Hopper, Sidney: *See—*
Hajimichael, Agathangelos; Hopper, Sidney; and Smith, Peter K., 4,383,099, Cl. 528-60.000.

Horen, David J. Scaffold bracket and hanger therefor. 4,382,571, Cl. 248-235.000.

Horgan, William J., Jr., to Blumcraft of Pittsburgh. Panic handle for doors. 4,382,620, Cl. 292-92.000.

Hori, Nobuo, to Sanjo Seiki Co., Ltd. Apparatus for mixing and dispensing liquid resins. 4,382,684, Cl. 366-178.000.

Horie, Kiyoshi; Morita, Yoshiaki; Mikamori, Yukio; Suzuki, Masaharu; and Yano, Susumu, to Nippon Fine Chemical Company, Ltd. Process for preparing cyclic phosphonitrilic chloride oligomers. 4,382,914, Cl. 423-300.000.

Horiguchi, Makoto: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,382,525, Cl. 220-456.000.

Horinouchi, Atsushi: *See—*
Nakata, Takeshi; Takase, Hitoshi; and Horinouchi, Atsushi, 4,383,157, Cl. 219-10.55B.

Horodysky, Andrew G.; Landis, Phillip S.; and Gemmill, Robert M., Jr., to Mobil Oil Corporation. Friction reducing and corrosion inhibiting lubricant additives and their compositions. 4,382,869, Cl. 252-47.500.

Hoshino, Tatsuo: *See—*
Fujiwara, Akiko; Hoshino, Tatsuo; and Sekine, Yuzuru, 4,383,037, Cl. 435-78.000.

Hosiden Electronics Co., Ltd.: *See—*
Aoki, Shigeo; Isogami, Shuzo; Hosoda, Motomi; Ukai, Yasuhiro; and Nagayoshi, Tatsuo, 4,382,659, Cl. 350-335.000.

Hosking, John H. Fuel injection spark plug. 4,383,198, Cl. 313-120.000.

Hosoda, Motomi: *See—*
Aoki, Shigeo; Isogami, Shuzo; Hosoda, Motomi; Ukai, Yasuhiro; and Nagayoshi, Tatsuo, 4,382,659, Cl. 350-335.000.

House Food Industrial Company Limited: *See—*
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, 4,382,967, Cl. 426-96.000.

House, Roy F., to Venture Innovations, Inc. Organophilic clay gellants. 4,382,868, Cl. 252-28.000.

Howie, Ian H.: *See—*
Berry, Charles A.; Berry, Peter J.; and Howie, Ian H., 4,383,271, Cl. 358-113.000.

Hubbard, Roswell E.: *See—*
Clough, Philip J.; Hubbard, Roswell E.; McDermott, John F.; and Miekka, Richard G., 4,382,831, Cl. 156-94.000.

Hubel, Werner: *See—*
Ucinhazska, Bruno; Disteldorf, Josef; Hubel, Werner; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,382,555, Cl. 239-714.000.

Huber, Bernd: *See—*
Fester, Walter; Huber, Bernd; and Schmidt, Gerhard, 4,383,086, Cl. 525-238.000.

Hubner, Oskar, to Sulzer Brothers Limited. Multiple pick system for a weaving machine. 4,382,455, Cl. 139-439.000.

Hubred, Gale L., to Chevron Research Company. Selective electrowinning of palladium. 4,382,845, Cl. 204-111.000.

Huchette, Michel: *See—*
Devos, Francis; Bussiere, Guy; and Huchette, Michel, 4,382,962, Cl. 426-3.000.

Huff, Robert G.; and O'Neill, John, to Ciba-Geigy Corporation. Plant maintenance control system. 4,383,298, Cl. 364-300.000.

Huffman, Ronald E., to KV33 Corporation. Dental model articulator. 4,382,787, Cl. 433-64.000.

Hughes Aircraft Company: *See—*
Barry, James D.; and Einhorn, Arthur J., 4,383,318, Cl. 372-6.000.
Chen, Bor-Uei, 4,382,978, Cl. 427-53.100.
Shields, Steven E.; and Fletcher, Bruce G., 4,382,658, Cl. 350-334.000.

Hulin, Jean P.; and DuBois, Gilles, to Lignes Telegraphiques et Telephoniques. Machining station for a production line for optical fiber cable elements. 4,382,732, Cl. 409-304.000.

Humphrey Products Company: *See—*
Loveless, Stanley M., 4,382,452, Cl. 137-625.430.

Humphries, Truman W.: *See—*
Neal, Jesse R., Jr.; Bleile, Henry R.; and Humphries, Truman W., 4,383,061, Cl. 523-458.000.

Hunter, Edwin J., to Toro Company, The. Side wheel roll leveling device. 4,382,556, Cl. 239-715.000.

Hurst Performance, Inc.: *See—*
Chun, Victor L., 4,382,491, Cl. 188-71.800.

Hutchison, Walter G. Vehicle disabling means. 4,382,714, Cl. 404-6.000.

Huyck Corporation: *See—*
Smart, Frederick R., 4,382,987, Cl. 428-212.000.

Hydro-Pac, Inc.: *See—*
Robertson, Walter W.; and Robertson, Walter W., Jr., 4,382,750, Cl. 417-397.000.

Hydromatik GmbH: *See—*
Lotter, Manfred, 4,382,399, Cl. 91-486.000.

I.M.A. - Industria Macchine Automatiche S.p.A.: *See—*
Romagnoli, Andrea, 4,382,355, Cl. 53-134.000.

Ichimura, Mitsuyoshi: *See—*
Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, 4,382,879, Cl. 252-457.000.

Ichino, Nobuyuki: *See—*
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ICI Australia Limited: *See—*
Whillans, Francis D., 4,382,982, Cl. 427-130.000.

Idaho Research Foundation, Inc.: *See—*
Peterson, Charles L., 4,382,471, Cl. 171-124.000.

Ideal Toy Corporation: *See—*
Tilbor, Neil, 4,382,599, Cl. 273-86.00B.

Ignatiev, Anatoly D.: *See—*
Khutoretsky, Garri M.; Ignatiev, Anatoly D.; Gurevich, Elrikh I.; Shurygin, Sergei Y.; Belova, Tamara N.; Azarov, Evgeny M., deceased; and Azarova, Ekaterina A., administrator, 4,383,190, Cl. 310-55.000.

Iguchi, Tokio: *See—*
Namiki, Ko; Iguchi, Tokio; Haga, Fumio; and Ishikawa, Masanobu, 4,382,389, Cl. 74-422.000.

IHC Holland N.V.: *See—*
van Drimmelen, Nicolaas J.; and Loevendie, Rudolf H., 4,382,419, Cl. 114-313.000.

Iida, Hiroshi, to Toray Industries, Inc. Flame retardant polyamide composition. 4,383,064, Cl. 524-100.000.

Ikebukuro, Munemitsu, to Nippondenso Co. Ltd. Air conditioning system for motor truck. 4,382,463, Cl. 165-12.000.

Illinois Water Treatment Company: *See—*
Dillman, Terry R., 4,382,862, Cl. 210-668.000.

Imperial Chemical Industries Limited: *See—*
Laidler, Dale A.; and Milner, David J., 4,383,112, Cl. 542-414.000.

Imperial Chemical Industries PLC: *See—*
Wem, James W., 4,382,900, Cl. 261-89.000.

Inazaki, Koji; Ueda, Takayuki; Oka, Toshihiro; and Kawai, Rippo, to Nippon Steel Corporation. Method of and apparatus for classifying steel products. 4,382,516, Cl. 209-517.000.

Indak Manufacturing Corp.: *See—*
Raab, Andrew F.; and Perkins, Arthur G., deceased, 4,383,147, Cl. 200-50.00C.

Independent Products Company, Inc.: *See—*
Bisk, Leonard; and Rogahn, Gunther, 4,382,531, Cl. 223-91.000.

Indiana University Foundation: *See—*
Kaplan, Jerome I., 4,383,219, Cl. 324-309.000.

Ingersoll-Rand Company: *See—*
Shaffer, Robert W.; and Acker, Jan R., 4,382,754, Cl. 418-55.000.

Ingham, John D.: *See—*
Gupta, Amitava; Ingham, John D.; and Yavrouian, Andre H., 4,383,129, Cl. 136-251.000.

Ingram Corporation: *See—*
Frias, Robert, 4,382,738, Cl. 414-22.000.
Minnis, C. W.; Hawkins, Hubert A.; and Davis, Wendell, 4,382,591, Cl. 269-156.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,382,820, Cl. 106-90.000.
Inoue, Kiyoshi, 4,383,159, Cl. 219-69.00W.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Structural composition for machine tool bodies and members. 4,382,820, Cl. 106-90.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electrical machining with a vibrating wire electrode. 4,383,159, Cl. 219-69.00W.

Inoue, Takehisa; and Koshikawa, Shigeru, to Mitsui Engineering & Shipbuilding Co., Ltd. Vertically movable marine working platform structure having vertically movable groundable support frames. 4,382,718, Cl. 405-196.000.

Inouye, Shigeharu: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,382,812, Cl. 71-86.000.

Institut Francais du Petrole: *See*—
Gatellier, Claude; Plessis, Andree; Gateau, Patrick; and Durand, Jean-Pierre, 4,382,873, Cl. 252-312.000.
Institute de Recherches de la Siderurgie Francaise: *See*—
Vayssiere, Pierre; and Groujean, Jean-Claude, 4,382,817, Cl. 75-59.000.
Instrumentarium Oy: *See*—
Hakala, Matti A.; Martikainen, Antti L. J.; and Auvinen, Jorma J., 4,382,806, Cl. 55-18.000.
Intel Corporation: *See*—
Smith, Ronald J.; and Dishaw, John P., 4,383,165, Cl. 219-121.0LN.
International Business Machines Corporation: *See*—
Beran, Mark A.; and Colglazier, Donald F., 4,382,593, Cl. 271-12.000.
Dorler, Jack A.; Jenkins, Michael O.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,383,216, Cl. 323-282.000.
Harding, Steven R.; Lamos, Richard A.; and Roller, Donald C., 4,382,592, Cl. 270-53.000.
Keller, John H.; and McKenna, Charles M., 4,383,177, Cl. 250-423.00R.
Mack, Alfred; and O'Neill, Brian C., 4,382,739, Cl. 414-217.000.
Nielson, Marlin C., 4,383,208, Cl. 318-618.000.
Rutz, Richard F., 4,382,837, Cl. 156-610.000.
International Computers Ltd.: *See*—
Davenport, Keith B., 4,382,701, Cl. 400-124.000.
International Harvester Co.: *See*—
Brandl, Michael C.; Holm, Charles H.; and Kataoka, David T., 4,382,482, Cl. 180-69.00R.
International Paint Company Limited, The: *See*—
Brook, Basil W.; and Reeder, Frank, 4,383,059, Cl. 523-412.000.
International Paper Company: *See*—
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,382,767, Cl. 425-504.000.
International Precision Incorporated: *See*—
Yonezawa, Akira; and Shirota, Kohei, 4,383,176, Cl. 250-396.0ML.
International Quartz Ltd.: *See*—
Lam, Hau C.; and Lee, Thomas K. P., 4,383,253, Cl. 340-629.000.
International Sludge Reduction Company: *See*—
Riise, Morris M., 4,382,863, Cl. 210-702.000.
International Standard Electric Corporation: *See*—
Chown, Martin; and Farrington, Jeffrey G., 4,382,681, Cl. 356-350.000.
Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. Automatic focus controlling device. 4,383,274, Cl. 358-227.000.
Iowa State University Research Foundation, Inc.: *See*—
Woods, James E., Jr.; and Maldonado, Eduardo A. B., 4,382,437, Cl. 126-433.000.
Irvine, Duncan: *See*—
Gemmell, David; Longley, Anthony; and Irvine, Duncan, 4,383,254, Cl. 340-712.000.
Irving, Edward: *See*—
Green, George E.; and Irving, Edward, 4,383,025, Cl. 430-280.000.
Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Polyimide-esters and filaments. 4,383,105, Cl. 528-170.000.
Ishihara Sangyo Kaisha Ltd.: *See*—
Haga, Takahiro; Nishikawa, Tetsuji; Nakajima, Toshio; Minamida, Kohji; and Maeda, Masaru, 4,383,116, Cl. 548-367.000.
Ishii, Yasuhiko: *See*—
Hashimoto, Masanori; Ishii, Yasuhiko; and Ohi, Yasuhiro, 4,382,864, Cl. 210-727.000.
Ishii, Yukihisa; Sakai, Yasuo; Goto, Takao; and Masuda, Kiyoshi, to Kakenyaku Kako Co., Ltd. Ophthalmic solution for intraocular pressure reduction. 4,382,953, Cl. 424-285.000.
Ishikawa, Masanobu: *See*—
Namiki, Ko; Iguchi, Tokio; Haga, Fumio; and Ishikawa, Masanobu, 4,382,389, Cl. 74-422.000.
Ishikawa, Takatoshi; Morigaki, Masakazu; Nakamura, Takashi; and Furutate, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material and method for developing thereof. 4,383,027, Cl. 430-372.000.
Ishikawa, Yoshiaki, to Aisin Seiki Kabushiki Kaisha. Door lock for vehicle. 4,382,622, Cl. 292-216.000.
Ishiyama, Kozo: *See*—
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; and Ishiyama, Kozo, 4,383,066, Cl. 524-124.000.
Isogami, Shuzo: *See*—
Aoki, Shigeo; Isogami, Shuzo; Hosoda, Motomi; Ukai, Yasuhiro; and Nagayoshi, Tatsuo, 4,382,659, Cl. 350-335.000.
Isshiki, Masanori, to Tokyo Shibaura Denki Kabushiki Kaisha. Perpendicular magnetic head and method of manufacturing the same. 4,383,284, Cl. 360-125.000.
Italtel Societa Italiana Telecommunicazioni S.p.A.: *See*—
Sbuelz, Anes, 4,383,313, Cl. 370-51.000.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See*—
D'Oro, Enzo C., 4,383,189, Cl. 307-529.000.
Italtractori.T.M. S.p.A.: *See*—
Lunardi, Alceste; Villani, Mauro; and Grilli, Walter, 4,382,741, Cl. 414-403.000.
Ito, Tadashi: *See*—
Suzuki, Yasuyuki; and Ito, Tadashi, 4,382,798, Cl. 8-94.10R.
Itoh, Kunio: *See*—
Shimizu, Hirokazu; Wada, Masaru; Sugino, Takashi; and Itoh, Kunio, 4,383,319, Cl. 372-45.000.
Itoh, Masashi, to Matsushita Electric Industrial Co., Ltd. Pickup cartridge of movable magnet type. 4,383,310, Cl. 369-136.000.
Itoh, Takeo: *See*—
Kurachi, Hisao; Itoh, Takeo; Onoda, Hiroshi; Okado, Kiyomichi; and Kuzuya, Susumu, 4,382,705, Cl. 400-697.100.
ITT Industries Inc.: *See*—
Binder, Helmut; Haar, Gerhard; Schmid, Eckhardt; and Wirth, Hans-Joachim, 4,383,290, Cl. 362-290.000.
Iwaasa, Takashi: *See*—
Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, 4,382,964, Cl. 426-7.000.
Iwanaga, Kazuyoshi: *See*—
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,382,496, Cl. 192-3.290.
Iwasaki, Shinichiro. Ignition system. 4,382,430, Cl. 123-606.000.
J. T. Stewart Associates, Inc.: *See*—
Stewart, John T., 4,382,544, Cl. 236-46.00R.
Jackson, Winston J., Jr.: *See*—
Olsen, Eric O.; and Jackson, Winston J., Jr., 4,383,101, Cl. 528-93.000.
Jacobs, Rae R., to Synthes AG. Instrument for treatment of spinal fractures, scoliosis and the like. 4,382,438, Cl. 128-69.000.
Jagger, Brian E.: *See*—
Gross, Thomas D.; and Jagger, Brian E., 4,382,703, Cl. 400-257.000.
Jain, Kantilal: *See*—
Pratt, George W., Jr.; and Jain, Kantilal, 4,382,660, Cl. 350-353.000.
James, Malcolm B. Acceleration sensor. 4,382,564, Cl. 242-107.40A.
Jamieson, Robert S., to California Institute of Technology. At grade optical crossover for monolithic optial circuits. 4,382,655, Cl. 350-96.120.
Janik, Edward: *See*—
Romanowicz, Stanislaw; Skoczynski, Wojciech; and Janik, Edward, 4,382,722, Cl. 405-291.000.
Janssen, Dieter: *See*—
Koddenberg, Theo; and Janssen, Dieter, 4,382,841, Cl. 202-256.000.
Janszen, Arthur A. Method of making stationary electrodes for electrostatic transducers. 4,382,328, Cl. 29-594.000.
Jaspert, Klaus-Dieter: *See*—
Schadlich, Fritz; Armbruster, Gerhard; and Jaspert, Klaus-Dieter, 4,382,458, Cl. 144-230.000.
Jeannerat, Claude: *See*—
Lohse, Friedrich; Trachsler, Dieter; and Jeannerat, Claude, 4,383,107, Cl. 528-323.000.
Jenkins, Fred W., to Petrolite Corporation. Organo zirconium complexes. 4,382,874, Cl. 252-329.000.
Jenkins, John B., II: *See*—
Perelli, David E.; Perelli, Stephen J.; and Jenkins, John B., II, 4,383,251, Cl. 340-527.000.
Jenkins, Michael O.: *See*—
Dorler, Jack A.; Jenkins, Michael O.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,383,216, Cl. 323-282.000.
Jensen, Finn U. H.; and Randlov, Sven-Age, to Kongskilde Koncernselskab A/S. Soil cultivating implement comprising a tined harrow and a trailing blade rotor. 4,382,474, Cl. 172-179.000.
Jensen, James W.; Miller, Stanley J.; Heniser, Eugene W.; Dalman, Donald P.; and Grevenstuk, Garth A., to Gulf & Western Manufacturing Company. Can end making apparatus. 4,382,737, Cl. 413-56.000.
Jochum, Peter: *See*—
Buechel, Franz; and Jochum, Peter, 4,382,533, Cl. 227-10.000.
Joffe, Boris B.: *See*—
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, to Hoechst Aktiengesellschaft. Process for preparing heat-curable, water-dilutable coating compositions and their use as coatings. 4,383,055, Cl. 523-221.000.
Johnson, Charles A., III: *See*—
Ward, Clifford; and Johnson, Charles A., III, 4,382,855, Cl. 208-236.000.
Johnson, Dennis E. J. Electro-chemical system for liquid filtration. 4,382,866, Cl. 210-748.000.
Johnson, Don R., to Harris & Thrush Manufacturing Company. Stabilized dump trailer. 4,382,631, Cl. 298-17.0SG.
Johnson, LeRoy B., to Schmelzer Corporation. Temperature responsive time delay valve. 4,382,899, Cl. 261-39.00B.
Johnston, Douglas N.: *See*—
Dube, Gerald W.; Strycharz, Paul B.; Steiger, Ross G.; and Johnston, Douglas N., 4,382,859, Cl. 210-96.100.
Jones, Addison B., to Rockwell International Corporation. Method for coating thin film alloy on a substrate utilizing inductive heating. 4,382,975, Cl. 427-8.000.
Jones, Albert S.: *See*—
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., 4,382,925, Cl. 424-180.000.
Jones, Ivor W.: *See*—
Bindin, Peter J.; and Jones, Ivor W., 4,383,013, Cl. 429-112.000.
Jones, James W. Thoracostomy pump-tube apparatus. 4,382,442, Cl. 604-28.000.
Jones, Ronald R., to Circuit Research Labs. Resonant filter clipper circuit. 4,383,229, Cl. 333-176.000.
Jordan, Friedrich, to Klockner-Humboldt-Deutz Aktiengesellschaft. Camshaft for reciprocable piston engines. 4,382,390, Cl. 74-567.000.
Jorgensen, August H., Jr., to B. F. Goodrich Company, The. Production of emulsion-polymerized butadiene rubber in powder form. 4,383,108, Cl. 528-485.000.

Jud AG: *See*—
Jud, Bruno, 4,382,726, Cl. 408-197.000.
Jud, Bruno, to Jud AG. Boring tool. 4,382,726, Cl. 408-197.000.
Judat, Artur: *See*—
Buttner, Gerhard; Judat, Artur; Allenbach, Udo; and Lenthe, Manfred, 4,383,126, Cl. 568-650.000.
Judd, Duncan B.: *See*—
Bradshaw, John; Judd, Duncan B.; Price, Barry J.; and Clitherow, John W., 4,382,929, Cl. 424-246.000.
Jundt, Werner: *See*—
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K-V Pharmaceutical Company: *See*—
Beinke, Hans C.; and Cuca, Robert C., 4,382,802, Cl. 44-51.000.
Kabel-u. Metallwerke Gutehoffnungshutte AG: *See*—
Fischer, Horst; Bunemann, Hermann; Henneken, Bernhard; and Kammerling, Bruno, 4,382,585, Cl. 266-190.000.
Kabeya, Motoo: *See*—
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Kabushiki Kaisha Daini Seikosha: *See*—
Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, 4,382,691, Cl. 368-157.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Sugimoto, Kaname, 4,383,034, Cl. 435-70.000.
Sugimoto, Kaname, 4,383,035, Cl. 435-70.000.
Sugimoto, Kaname, 4,383,036, Cl. 435-70.000.
Kabushiki Kaisha Ogura Chuck Seisakusho: *See*—
Kimura, Kiyoshi, 4,382,331, Cl. 30-180.000.
Kabushiki Kaisha Ono Sokki: *See*—
Ono, Masamichi, 4,382,388, Cl. 73-861.180.
Kabushiki Kaisha Sato: *See*—
Sato, Yo; Abe, Norio; Kikuchi, Suguru; Goto, Fumio; and Sugimoto, Akira, 4,382,835, Cl. 156-384.000.
KACO GmbH & Co.: *See*—
Heinrich, Richard; and Heinrich, Rainer, 4,382,587, Cl. 267-160.000.
Kadlec, Richard T.: *See*—
Beck, Charles E.; and Kadlec, Richard T., 4,383,202, Cl. 315-200.00A.
Kaiser Aluminum & Chemical Corporation: *See*—
Wilson, Geoffrey; and Kayamoto, Masami, 4,382,854, Cl. 208-216.00R.
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, to Hitachi, Ltd. Earthquake resistant crane. 4,382,413, Cl. 105-163.00R.
Kakenyaku Kako Co., Ltd.: *See*—
Ishii, Yukihisa; Sakai, Yasuo; Goto, Takao; and Masuda, Kiyoshi, 4,382,953, Cl. 424-285.000.
Kali Chemie AG: *See*—
Rudolph, Werner; and Fernschild, Guenter, 4,382,897, Cl. 260-544.00Y.
Kaltenbach & Voight GmbH & Co.: *See*—
Gmeinder, Hermann; and Beier, Stefan, 4,383,167, Cl. 377-2.000.
Loge, Hans; Kuhn, Bernhard; Bareth, Erich; and Lohn, Gerd, 4,382,790, Cl. 433-126.000.
Lohn, Gerd; and Beier, Stefan, 4,382,786, Cl. 433-85.000.
Kalyanasundaram, Kuppuswamy: *See*—
Gratzel, Michael; Kiwi, John; Kalyanasundaram, Kuppuswamy; and Philp, John, 4,382,846, Cl. 204-157.10R.
Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens barrel capable of close up photography. 4,382,661, Cl. 350-430.000.
Kamiya, Kunio: *See*—
Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, 4,382,879, Cl. 252-457.000.
Kammerling, Bruno: *See*—
Fischer, Horst; Bunemann, Hermann; Henneken, Bernhard; and Kammerling, Bruno, 4,382,585, Cl. 266-190.000.
Kanchev, Peter K., to Bulgarsko Radio. Electrostatic acoustic converter. 4,383,139, Cl. 179-111.00R.
Kaneko, Katsukichi. Beading for a suitcase. 4,383,142, Cl. 190-49.000.
Kanero, Takahiro; and Minami, Yusuke, to Nippon Kokan Kabushiki Kaisha. Austenite alloy tubes having excellent high temperature vapor oxidation resistant property. 4,382,829, Cl. 148-39.000.
Kao, James T. F.; and Marlett, Everett M., to Ethyl Corporation. Process for producing substituted pyrroles. 4,383,117, Cl. 548-531.000.
Kaplan, Jean-Pierre; and George, Pascal, to Synthelabo. Imidazo[1,2-a] pyridine derivatives and their application as pharmaceuticals. 4,382,938, Cl. 424-256.000.
Kaplan, Jerome I., to Indiana University Foundation. Nuclear magnetic resonance spatial mapping. 4,383,219, Cl. 324-309.000.
Kapp, Nancy J.; and Bennett, Charles H. Smoke and pollutant filtering device. 4,382,440, Cl. 128-201.250.
Karl, Leopold; Batz, Manfred; and Wundling, Herbert, to Kindermann & Co. GmbH. Mechanism for transporting a slide from a long magazine into the optical channel of a slide projector. 4,382,664, Cl. 353-111.000.
Karol, Frederick J.: *See*—
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,383,095, Cl. 526-88.000.
Kasai, Kenjiro: *See*—
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, 4,382,413, Cl. 105-163.00R.
Kashden, R. Paul, to Closet Systems Corp. Portable storage shelf unit. 4,382,640, Cl. 312-5.000.
Kataoka, David T.: *See*—
Brandl, Michael C.; Holm, Charles H.; and Kataoka, David T., 4,382,482, Cl. 180-69.00R.
Kato, Masatoshi: *See*—
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,383,231, Cl. 335-146.000.
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, to Sumitomo Chemical Company, Limited. Cerebral vasodilator eburnane derivatives. 4,382,936, Cl. 424-256.000.
Kawahara, Sakae. Pavement water conservation method. 4,382,713, Cl. 404-4.000.
Kawaharada, Minoru: *See*—
Yamamoto, Hiroyasu; Nakajima, Koe; Kawaharada, Minoru; and Uehori, Yuji, 4,382,375, Cl. 72-205.000.
Kawaharazaki, Takashi: *See*—
Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, 4,382,563, Cl. 242-107.000.
Kawai, Kiyohisa: *See*—
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Kawai, Rippo: *See*—
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Kawakami, Hajime: *See*—
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, 4,382,936, Cl. 424-256.000.
Kawamura, Masaharu: *See*—
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Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, 4,382,426, Cl. 123-41.100.
Kawase, Nobuo; and Aigo, Masayoshi, to Fujitsu Limited. Quartz tube for thermal processing of semiconductor substrates. 4,382,776, Cl. 432-9.000.
Kawashima, Hirokuni: *See*—
Suzuki, Kiyoshi; and Kawashima, Hirokuni, 4,382,917, Cl. 423-561.00B.
Kay Laboratories, Inc.: *See*—
Truelock, Donald E.; and Turner, Richard W., 4,382,446, Cl. 128-402.000.
Kayamoto, Masami: *See*—
Wilson, Geoffrey; and Kayamoto, Masami, 4,382,854, Cl. 208-216.00R.
Keeffe, William M.: *See*—
Gungle, W. Calvin; Keeffe, William M.; and Work, Dale E., 4,383,197, Cl. 313-38.000.
Kehl, William L., to Gulf Research & Development Company. Catalytic supports with controlled pore properties. 4,382,877, Cl. 252-437.000.
Kehl, William L., to Gulf Research & Development Company. Catalytic supports with controlled pore properties. 4,382,878, Cl. 252-437.000.
Keiper U.S.A., Inc.: *See*—
Weston, Allen H., 4,382,630, Cl. 297-362.000.
Keller, John H.; and McKenna, Charles M., to International Business Machines Corporation. Multipole implantation-isotope separation ion beam source. 4,383,177, Cl. 250-423.00R.
Kellogg-Smith, Ogden. Detachable nestable mast steps. 4,382,416, Cl. 114-90.000.
Kelly, Jack E.: *See*—
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., 4,383,226, Cl. 333-33.000.
Kelly, James B.; and Kelly, Viola F. Double-door security rural mailbox. 4,382,540, Cl. 232-17.000.
Kelly, John W., to Haskel Engineering and Supply Co. Leak detection apparatus and method for use with tube and tube sheet joints. 4,382,379, Cl. 73-46.000.
Kelly, Thomas L. Reverse furring technique. 4,382,353, Cl. 52-506.000.
Kelly, Viola F.: *See*—
Kelly, James B.; and Kelly, Viola F., 4,382,540, Cl. 232-17.000.
Kenney, George C., II, to North American Philips Corporation. Reproduction of special purpose information on a video disc. 4,383,279, Cl. 358-341.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Petersen, Klaus, 4,382,908, Cl. 376-299.000.
Khutoretsky, Garri M.; Ignatiev, Anatoly D.; Gurevich, Elrikh I.; Shurygin, Sergei Y.; Belova, Tamara N.; Azarov, Evgeny M., deceased; and by Azarova, Ekaterina A., administrator. Non-reversible electrical machine with gas cooling. 4,383,190, Cl. 310-55.000.
Kibag Aktiengesellschaft Baggerei-Unternehmungen & Kieswerke am Zurichsee: *See*—
Gallmann, Ernst, 4,382,988, Cl. 428-222.000.
Kihara, Utsuo: *See*—
Torii, Michihiro; Kihara, Utsuo; Goto, Hirohito; and Sasaki, Isamu, 4,382,839, Cl. 156-616.00R.
Kikkoman Corporation: *See*—
Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, 4,382,964, Cl. 426-7.000.
Kikuchi, Junzo: *See*—
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Kikuchi, Makoto: *See*—
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Kikuchi, Suguru: *See*—
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Kikuchi, Yasuharu: *See*—
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Kikuchi, Yasuo: *See*—
Higo, Moriaki; Kikuchi, Yasuo; Kitoh, Shinya; Suzuki, Shin-ichi; and Toda, Haruhiko, 4,383,052, Cl. 523-118.000.
Kikuchi, Yoshimi: *See*—
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Kim, In H.: *See*—
Nagle, Dennis C.; McCall, Myron T.; and Kim, In H., 4,383,045, Cl. 501-109.000.
Kimura, Kiyoshi, to Kabushiki Kaisha Ogura Chuck Seisakusho. Hydraulic cutter. 4,382,331, Cl. 30-180.000.
Kimura, Takashi: *See*—
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, 4,382,967, Cl. 426-96.000.
Kimura, Toshihiro: *See*—
Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, 4,382,999, Cl. 428-494.000.
Kindermann & Co. GmbH: *See*—
Karl, Leopold; Batz, Manfred; and Wundling, Herbert, 4,382,664, Cl. 353-111.000.
King, Norman S., to Holywell Engineering Limited. Mine roadway support stilt. 4,382,721, Cl. 405-288.000.
Kinoshita, Tatsuo; Oguchi, Yutaka; Maruhashi, Kenji; Kojima, Ichiro; Endoh, Noboru; and Satoh, Tetsuo, to Nippon Oil Company, Ltd. Process for purifying and separating vitamin B_{12}. 4,383,110, Cl. 536-28.000.
Kioritz Corporation: *See*—
Nagashima, Akira; and Saito, Yasuo, 4,382,333, Cl. 30-381.000.
Kira, Gene S.; and Sorensen, Jens O., to Kira, Gene Sadao; and Sorensen, Jens Ole. Energy conversion derived from pressure and temperature differentials at different elevations. 4,382,365, Cl. 60-675.000.
Kira, Gene Sadao: *See*—
Kira, Gene S.; and Sorensen, Jens O., 4,382,365, Cl. 60-675.000.
Kirakuperman, Mikhail: *See*—
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Kiraly, Gyorgy: *See*—
Nedeczky nee Gardy, Margit; and Kiraly, Gyorgy, 4,382,961, Cl. 424-364.000.
Kirkham, Steven C., to Dresser Industries, Inc. Hydraulic logic control for variable displacement pump. 4,382,485, Cl. 180-306.000.
Kita, Jean-Claude: *See*—
Delessard, Serge L. J. E.; Puff, Roger M.; and Kita, Jean-Claude, 4,382,777, Cl. 432-15.000.
Kitai, Kiyoshi; and Saito, Takeo, to Seiko Koki Kabushiki Kaisha. Timepiece circuit for compensating time lag joined with reset releasing. 4,382,694, Cl. 368-187.000.
Kitai, Makoto: *See*—
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Kitoh, Shinya: *See*—
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Kitsu, Seiki; Yanagisawa, Masayasu; and Kobayashi, Hitoshi, to Greenterior Co., Ltd., The. Soilless plant growing device. 4,382,348, Cl. 47-59.000.
Kiuchi, Masayoshi; and Kawamura, Masaharu, to Canon Kabushiki Kaisha. Exposure compensation information forming apparatus for a camera. 4,382,667, Cl. 354-43.000.
Kiwi, John: *See*—
Gratzel, Michael; Kiwi, John; Kalyanasundaram, Kuppuswamy; and Philp, John, 4,382,846, Cl. 204-157.10R.
Kleeb, Markus, to Tschudin & Heid AG. Pushbutton switch. 4,383,144, Cl. 200-5.00R.
Klein, Paul E.; and Anderson, Roland M., to Modcom, Inc. End-connector grommet device for orthodontic chain. 4,382,782, Cl. 433-18.000.
Kleinert, Horst: *See*—
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Kleinschmidt, Peter; and Magori, Valentin, to Siemens Aktiengesellschaft. Pressure sensor for an internal combustion engine. 4,382,377, Cl. 73-35.000.
Klem, John E.; Hammoud, Ezzat A.; and Nelson, Daniel E., to Dresser Industries, Inc. Loader bellcrank mounting means. 4,382,744, Cl. 414-712.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Jordan, Friedrich, 4,382,390, Cl. 74-567.000.
Klose, Robert E.; and Sjonvall, Ragnar E., to General Foods Corporation. Low-calorie, sugar-free chewing gum containing polydextrose. 4,382,963, Cl. 426-3.000.
Klosin, John J.; and McGrane, Eugene W., to Homac Mfg. Company. Transformer bar connector. 4,382,651, Cl. 339-92.00R.
Kluger, Edward W., to Milliken Research Corporation. Aminoalkoxyamides and epoxy resin compositions containing same. 4,383,103, Cl. 528-111.000.
Kmetz, Richard C.: *See*—
Ferris, Theodore V.; and Kmetz, Richard C., 4,383,123, Cl. 568-473.000.
Knauff, Robert J. Pseudo multi light display device and generator therefor. 4,383,244, Cl. 340-321.000.
Knoch, Wolfgang: *See*—
Nopper, Herbert; and Knoch, Wolfgang, 4,382,758, Cl. 425-82.100.
Knotek, Charles J.: *See*—
Holmgren, Nils; and Knotek, Charles J., 4,383,151, Cl. 200-148.00R.
Knothe, Erich; Berg, Christoph; and Melcher, Franz-Josef, to Sartorius GmbH. Weighing machine with flat magnets for electromagnetic torque compensation. 4,382,480, Cl. 177-212.000.
Ko, Allen W.; and Starr, John B., Jr., to General Electric Company. Inhibition of discoloration of transesterification polymers with chromium, nickel, tantalum or glass lined reactor. 4,383,092, Cl. 526-62.000.
Kobayashi, Hidetoshi: *See*—
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,382,955, Cl. 424-309.000.
Kobayashi, Hiroshi: *See*—
Takagi, Nobuyuki; Kobayashi, Hiroshi; and Yoshida, Okio, 4,383,170, Cl. 250-216.000.
Kobayashi, Hitoshi: *See*—
Kitsu, Seiki; Yanagisawa, Masayasu; and Kobayashi, Hitoshi, 4,382,348, Cl. 47-59.000.
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, to Toyo Seikan Kaisha, Ltd. Side seam-coated welded cans and process for preparation thereof. 4,382,525, Cl. 220-456.000.
Koddenberg, Theo; and Janssen, Dieter, to Dr. C. Otto & Comp. G.m.b.H. Apparatus for operating offtake and main valves. 4,382,841, Cl. 202-256.000.
Koehring GmbH - Bomag Division: *See*—
Vural, Gulertan; and Carle, Udo, 4,382,715, Cl. 404-133.000.
Kogure, Toshiharu: *See*—
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Koh-I-Noor Rapidograph, Inc.: *See*—
Anderka, Gerold, 4,382,707, Cl. 401-198.000.
Kohashi, Tadao, to Matsushita Electric Industrial Co., Ltd. Electroosmotic ink recording apparatus. 4,383,265, Cl. 346-140.00R.
Koike, Takeshi: *See*—
Shibata, Atsushi; and Koike, Takeshi, 4,383,178, Cl. 250-441.100.
Kojima, Akira; and Okamoto, Atutoshi, to Nippondenso Co., Ltd. Voice warning system for vehicles. 4,383,241, Cl. 340-52.00F.
Kojima, Ichiro: *See*—
Kinoshita, Tatsuo; Oguchi, Yutaka; Maruhashi, Kenji; Kojima, Ichiro; Endoh, Noboru; and Satoh, Tetsuo, 4,383,110, Cl. 536-28.000.
Kojima, Kiyohide: *See*—
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Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
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Kolm, Eric A.: *See*—
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Kolm, Henry H.; and Kolm, Eric A., to Piezo Electric Products, Inc. Piezoelectric snap actuator. 4,383,195, Cl. 310-330.000.
Kondo, Shinichi: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,382,926, Cl. 424-181.000.
Kondo, Shiro; and Kumagai, Masao, to Alps Electric Co., Ltd. Locking type push-button switch. 4,383,153, Cl. 200-153.00J.
Kongskilde Koncernselskab A/S: *See*—
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Konnai, Makoto: *See*—
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Konsumex Kulkereskedelmi Vallalat: *See*—
Dezsi, Istvan, 4,382,601, Cl. 273-153.00S.
Konz, Gerald J. Towable paired teams of farm implements. 4,382,608, Cl. 280-411.00A.
Kopineck, Hermann-Josef; Tappe, Wilhelm; and Fabian, Wolfgang, to Hoesch Werke AG. Method of, and apparatus for, effecting temperature-equalization of hot steel strip. 4,382,374, Cl. 72-202.000.
Koppl, Georg; and Rappange, Adelbert, to BBC Brown, Boveri & Company, Limited. Circuit breaker. 4,383,152, Cl. 200-148.00R.
Korenberg, Jakob, to York-Shipley, Inc. Fluidized bed reactor utilizing a bottomless plate grid and method of operating the reactor. 4,382,415, Cl. 110-245.000.
Korman, Albert: *See*—
Roy, Richard N.; Labbe, Clerval; and Korman, Albert, 4,382,757, Cl. 425-4.00R.
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, to House Food Industrial Company Limited. Method for preparing porous saccharide granules and foods therefrom. 4,382,967, Cl. 426-96.000.
Koshikawa, Shigeru: *See*—
Inoue, Takehisa; and Koshikawa, Shigeru, 4,382,718, Cl. 405-196.000.
Kosonen, Vaino J., to Dorr-Oliver Incorporated. Cam-actuated stop member for lifting mechanism. 4,382,848, Cl. 204-194.000.

Kotani, Sumihisa: *See*—
Suefuji, Kazutaka; Arata, Tetsuya; Tomita, Yoshikatsu; Kotani, Sumihisa; Uchikawa, Naoshi; and Murayama, Akira, 4,382,370, Cl. 62-324.100.

Kothmann, Richard E., to United States of America, Energy. Low hydrostatic head electrolyte addition to fuel cell stacks. 4,383,009, Cl. 429-39.000.

Kottman, Clifford: *See*—
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Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Combating fungi with 1-phenoxy-1-triazolyl-3-fluoromethyl-butane derivatives. 4,382,944, Cl. 424-269.000.

Kreuger, Frederik H.: *See*—
Bentvelsen, Petrus A. C.; Kreuger, Frederik H.; and Monteny, Marinus K., 4,383,132, Cl. 174-120.0SC.

Krobel, Heinz; Bruch, Roland; Eickel, Rolf; Muller, Jurgen; Farber, Heinrich; and Bauer, Gunther, to Agfa-Gevaert Aktiengesellschaft. Apparatus for recording data on X-ray films or the like. 4,383,329, Cl. 378-166.000.

Kronman, Albert F. Two-way envelopes with return flap positioning means and method. 4,382,539, Cl. 229-73.000.

Krugel, Karl-Heinz; Tappeiner, Hermann; Paessler, Ernst-Robert; and Smutny, Kurt, to Siemens Aktiengesellschaft. Powerline carrier control installation. 4,383,243, Cl. 340-310.00R.

Kruger, Robert A., to University of Utah. Radiographic systems employing multi-linear arrays of electronic radiation detectors. 4,383,327, Cl. 378-19.000.

Krupp-Kautex Maschinenbau GmbH: *See*—
Daubenbuchel, Werner; and Hess, Dieter, 4,382,761, Cl. 425-140.000.

Kuan, Tiong H., to General Tire & Rubber Company, The. Bushings. 4,383,074, Cl. 524-496.000.

Kubo, Kikuo, to Ricoh Company, Ltd. Copying apparatus comprising interconnectable copying machines. 4,383,277, Cl. 358-258.000.

Kubota Ltd.: *See*—
Nakagawa, Masao, 4,382,604, Cl. 280-6.00H.

Kubota, Tatsuhi, to Tokai-Rika-Seisakusho K.K. Webbing guide device of an automatic seat belt applying equipment. 4,382,614, Cl. 280-802.000.

Kugel, Roger W., to Nalco Chemical Company. Laboratory method for testing the effectiveness of release agents for preventing coal from freezing to the sides of coal cars. 4,382,699, Cl. 374-46.000.

Kuhle, Engelbert; Paul, Volker; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with N-sulphenylated biurets. 4,382,956, Cl. 424-322.000.

Kuhn, Bernhard: *See*—
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Kuipers, Arie: *See*—
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Kumagai, Masao: *See*—
Kondo, Shiro; and Kumagai, Masao, 4,383,153, Cl. 200-153.00J.

Kumar, Niraj; and Varney, John, to Ebauches Electroniques, S.A. Electro-optical analog time display device. 4,382,696, Cl. 368-240.000.

Kurachi, Hisao; Itoh, Takeo; Onoda, Hiroshi; Okado, Kiyomichi; and Kuzuya, Susumu, to Brother Kogyo Kabushiki Kaisha. Typewriter with an erasing apparatus. 4,382,705, Cl. 400-697.100.

Kurahashi, Koichiro; and Tomimatsu, Noriyuki, to Mitsubishi Denki Kabushiki Kaisha. Display device. 4,383,256, Cl. 340-793.000.

Kuraray Isoprene Chemical Co. Ltd.: *See*—
Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, 4,382,999, Cl. 428-494.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,382,955, Cl. 424-309.000.

Kurihara, Tetsurou; and Nishio, Kohsaku, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray stereoscopic cinematography apparatus. 4,383,328, Cl. 378-042.000.

Kurita Water Industries Ltd.: *See*—
Hashimoto, Masanori; Ishii, Yasuhiko; and Ohi, Yasuhiro, 4,382,864, Cl. 210-727.000.

Kurkov, Victor P., to Chevron Research Company. 1,3,4-Trisubstituted-2-pyrazolin-5-one fungicides. 4,382,948, Cl. 424-273.00P.

Kuroda, Masaki: *See*—
Aikawa, Chuta; Sanada, Noriyoshi; Murakami, Mitsuyoshi; Kikuchi, Junzo; and Kuroda, Masaki, 4,383,137, Cl. 179-18.0ES.

Kurz, Craven H. Radio wave vibrational orthodontic appliance. 4,382,780, Cl. 433-5.000.

Kutsuzawa, Tadashi; Shirane, Hideo; Fujihara, Mikiharu; and Hisada, Hideho, to Fujizoki Pharmaceutical Co., Ltd. Automatic enzyme immunoassay apparatus. 4,383,041, Cl. 435-291.000.

Kuwabara, Takao; and Okumura, Hiroshi, to Hitachi, Ltd. Method of controlling wicket gates of a pump-turbine. 4,382,745, Cl. 415-1.000.

Kuzuya, Susumu: *See*—
Kurachi, Hisao; Itoh, Takeo; Onoda, Hiroshi; Okado, Kiyomichi; and Kuzuya, Susumu, 4,382,705, Cl. 400-697.100.

Kvamsdal, Rolf, to Moss Rosenberg Verft A/S. Spherical tank supported by a vertical skirt. 4,382,524, Cl. 220-445.000.

KV33 Corporation: *See*—
Huffman, Ronald E., 4,382,787, Cl. 433-64.000.

Kwan, William C. T., to Rolls-Royce Limited. Manufacture of laminated material. 4,382,534, Cl. 228-161.000.

Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Weiershausen, Rolf, to Dr. C. Otto & Comp. G.m.b.H. Coke distributing apparatus in a smoke hood. 4,382,842, Cl. 202-263.000.

L. Gordon & Sons, Inc.: *See*—
Gordon, Bertram I., 4,382,509, Cl. 206-331.000.

Labbe, Clerval: *See*—
Roy, Richard N.; Labbe, Clerval; and Korman, Albert, 4,382,757, Cl. 425-4.00R.

Laboratoire Roger Bellon: *See*—
Matsumoto, Jun-ichi; and Nakamura, Shinichi, 4,382,937, Cl. 424-256.000.

Laboratoires Sauba S.A.: *See*—
Buzas, Andre; Melon, Jean-Marie; Lavielle, Gilbert; and Champagnac, Andre, 4,382,935, Cl. 424-250.000.

LaBounty, Roy E. Grapple shear. 4,382,625, Cl. 294-104.000.

Lacroix, Guy: *See*—
Abblard, Jean; Gaulliard, Jean-Michel; and Lacroix, Guy, 4,382,928, Cl. 424-211.000.

Lafosse, Claude; and Lepetit, Jacques, to Framatome. Device for the remote coupling and uncoupling of two elements of great length disposed coaxially and end to end. 4,382,711, Cl. 403-290.000.

Laidler, Dale A.; and Milner, David J., to Imperial Chemical Industries Limited. Chiral amino-alcohol complexes. 4,383,112, Cl. 542-414.000.

Lam, Hau C.; and Lee, Thomas K. P., to International Quartz Ltd. Ionization smoke detector. 4,383,253, Cl. 340-629.000.

Lamberti, Vincent; and Ronort, Mark D., to Lever Brothers Company. Detergent compositions. 4,382,871, Cl. 252-174.190.

Lamos, Richard A.: *See*—
Harding, Steven R.; Lamos, Richard A.; and Roller, Donald C., 4,382,592, Cl. 270-53.000.

Lancaster Colony Corporation: *See*—
Lightle, Robert E.; Lockwood, James R.; Busch, Douglas F.; and Mosholder, Michael B., 4,382,606, Cl. 280-154.50R.

Landis, Phillip S.: *See*—
Horodysky, Andrew G.; Landis, Phillip S.; and Gemmill, Robert M., Jr., 4,382,869, Cl. 252-47.500.

Lanfranconi, Attilio, to Societa' Cavi Pirelli S.p.A. Above-ground conductor unit with corona noise reducing covering. 4,383,133, Cl. 174-127.000.

Langhorst, Martin A.: *See*—
Stevens, Timothy S.; and Langhorst, Martin A., 4,383,047, Cl. 521-28.000.

Larkin, Sam. Rollable golf bag. 4,382,612, Cl. 280-646.000.

Larsson, Hans G.; and Westman, Erik, to ASEA Aktiebolag. Method for manufacturing a metal powder by granulation of a metal melt. 4,382,903, Cl. 264-12.000.

Lattanzi, William E.: *See*—
Purcell, Harold F.; Lattanzi, William E.; and Pike, Robert W., 4,383,252, Cl. 340-606.000.

Laubenberger, Herbert: *See*—
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,382,358, Cl. 57-243.000.

Laughlin, Sidney J. Method and apparatus for extracting fiber product. 4,382,857, Cl. 209-23.000.

Lavielle, Gilbert: *See*—
Buzas, Andre; Melon, Jean-Marie; Lavielle, Gilbert; and Champagnac, Andre, 4,382,935, Cl. 424-250.000.

La Warre, Robert W., Sr. Disc brake assembly. 4,382,493, Cl. 188-73.430.

Lawson, David F.; Hayes, Robert A.; and Altenau, Alan G., to Firestone Tire & Rubber Company, The. Flame and smoke retardant elastomers formed by grafting vinylidene chloride on diene/butyl acrylate copolymers. 4,383,071, Cl. 524-432.000.

Layton, Wilbur T.; and Zachry, Clyde L. Bi level etched magnetic coil. 4,383,235, Cl. 336-200.000.

Leach & Garner Company: *See*—
McDonald, Thomas J.; and Chatel, Robert E., 4,382,317, Cl. 24-155.0BB.

Leavitt, Richard I., to Ethyl Corporation. Process for the preparation of L-proline by cultivating algae. 4,383,038, Cl. 435-107.000.

Leavitt, Richard I., to Ethyl Corporation. L-Proline production from algae. 4,383,039, Cl. 435-107.000.

Lechner, Gisbert: *See*—
Meyerle, Michael; Lechner, Gisbert; and Ott, Anton, 4,382,392, Cl. 74-687.000.

Lee, Charles E., to Cutter Laboratories, Inc. Dye leak detection method. 4,382,679, Cl. 356-237.000.

Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether resin compositions containing polyolefin in high amount. 4,383,082, Cl. 525-92.000.

Lee, Man S., to GTE Automatic Electric Laboratories, Inc. Simulation circuit employing switched capacitors. 4,383,305, Cl. 364-802.000.

Lee, Shih-Ying; and Briefer, Dennis K., to Setra Systems, Inc. Weighing system. 4,382,479, Cl. 177-189.000.

Lee, Thomas K. P.: *See*—
Lam, Hau C.; and Lee, Thomas K. P., 4,383,253, Cl. 340-629.000.

Lehmann, Herbert G. Device for automatically maintaining toilets clean. 4,382,304, Cl. 4-228.000.

Lemaitre, Gerard R., to A.N.V.A.R. Semi-fixed astronomical mirrors and aspherical gratings and methods for manufacturing same by elastic flexion. 4,382,657, Cl. 350-295.000.

Lemelson, Jerome H. Electronic digital watch. 4,382,687, Cl. 368-278.000.

Lenthe, Manfred: *See*—
Buttner, Gerhard; Judat, Artur; Allenbach, Udo; and Lenthe, Manfred, 4,383,126, Cl. 568-650.000.

Le Penven, Yves; and Gabard, Danial, to Centre Technique des Industries Mecaniques (CETIM). Method, device and filler metal for fluxless soldering. 4,382,535, Cl. 228-262.000.

Lepetit, Jacques: *See*—
Lafosse, Claude; and Lepetit, Jacques, 4,382,711, Cl. 403-290.000.

Lerner, Bernard, to Automated Packaging Systems, Inc. Article handling system with dispenser. 4,382,527, Cl. 222-56.000.

LeRoux, Donald F.: *See*—
DeFelice, Charles P.; and LeRoux, Donald F., 4,383,330, Cl. 378-187.000.

Lesieur, Jean-Paul, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Method and arrangement for magnetic digital recording with high frequency biasing with suppression of DC components in the recording signals. 4,383,281, Cl. 360-45.000.

Lever Brothers Company: *See*—
Lamberti, Vincent; and Ronort, Mark D., 4,382,871, Cl. 252-174.190.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Agricultural sulfonamides. 4,383,113, Cl. 544-211.000.

Levy, Fernand J., to Avions Marcel Dassault-Breguet Aviation. Antistatic coating and its method of preparation. 4,382,881, Cl. 252-500.000.

Lewin, Ian. Task lighting fixture for concentrating illumination. 4,383,289, Cl. 362-33.000.

Lewis, Arthur M., to Exxon Research and Engineering Co. Demand drop forming device with interacting transducer and orifice combination. 4,383,264, Cl. 346-140.00R.

Lewis, Martyn A., to Minnesota Mining and Manufacturing Company. Control system for transducer positioning motor. 4,383,209, Cl. 318-696.000.

Liang, Christopher. Electrical switching apparatus. 4,383,186, Cl. 307-113.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Baumer, Hans, 4,382,408, Cl. 102-216.000.

Lickert, Jodey J. Prenatal mattress. 4,382,306, Cl. 5-465.000.

Liedtke, Werner, to Mannesmann Aktiengesellschaft. Shaft furnace and a method for the operation of the shaft furnace for the melting down of non-ferrous metals in a recycling process, particularly for the melting down of lead. 4,382,584, Cl. 266-142.000.

Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, to General Electric Company. Transfer lamination of copper thin sheets and films, method and product. 4,383,003, Cl. 428-611.000.

Lifshitz, Igor; and Kirakuperman, Mikhail. Apparatus for making dough envelopes containing filling. 4,382,768, Cl. 425-510.000.

Liggett, Allen C.; and Toruk, Nicholas, to General Motors Corporation. Multiposition hood hinge mechanism. 4,382,312, Cl. 16-365.000.

Lighting Systems, Inc.: *See*—
Zelina, John H., Jr., 4,383,145, Cl. 200-16.00D.

Lightle, Robert E.; Lockwood, James R.; Busch, Douglas F.; and Mosholder, Michael B., to Lancaster Colony Corporation. Spray controlling system and splash guard for automotive vehicles. 4,382,606, Cl. 280-154.50R.

Lignes Telegraphiques et Telephoniques: *See*—
Hulin, Jean P.; and DuBois, Gilles, 4,382,732, Cl. 409-304.000.

Lin, Chii H. Multi-layered solar heat reflecting safety glass. 4,382,995, Cl. 428-415.000.

Lindsey, John S.: *See*—
Henslee, Walter W.; Morrow, Stanley J.; Lindsey, John S.; Christenson, Christopher P.; and Schwantje, Hans H., 4,382,997, Cl. 428-446.000.

Lion Corporation: *See*—
Higo, Moriaki; Kikuchi, Yasuo; Kitoh, Shinya; Suzuki, Shin-ichi; and Toda, Haruhiko, 4,383,052, Cl. 523-118.000.

Litek International Inc.: *See*—
Stanley, Charles A., 4,383,203, Cl. 315-248.000.

Litton Industrial Products, Inc.: *See*—
Dube, Gerald W.; Strycharz, Paul B.; Steiger, Ross G.; and Johnston, Douglas N., 4,382,859, Cl. 210-96.100.

Lizdas, Thomas E. Barbecue grill with vertically adjustable grate. 4,382,432, Cl. 126-25.00A.

Locatelli, Jean-Louis; and Soula, Gerard, to Rhone-Poulenc Industries. Preparation of glycidyl polyethers of polyphenols. 4,383,118, Cl. 549-517.000.

Lockwood, James R.: *See*—
Lightle, Robert E.; Lockwood, James R.; Busch, Douglas F.; and Mosholder, Michael B., 4,382,606, Cl. 280-154.50R.

Lococo, Michael P. Multiple inlet dental impression tray. 4,382,785, Cl. 433-36.000.

Loevendie, Rudolf H.: *See*—
van Drimmelen, Nicolaas J.; and Loevendie, Rudolf H., 4,382,419, Cl. 114-313.000.

Loew, Peter, to Ciba-Geigy Corporation. Process for spin dyeing polymers or copolymers of acrylonitrile with quaternized heterocyclic diazo dye and tetrafluoro-borate anion. 4,382,801, Cl. 8-538.000.

Loge, Hans; Kuhn, Bernhard; Bareth, Erich; and Lohn, Gerd, to Kaltenbach & Voight GmbH & Co. Dental handpiece. 4,382,790, Cl. 433-126.000.

Lohn, Gerd; and Beier, Stefan, to Kaltenbach & Voight GmbH & Co. Dental handpieces with supplied operating media. 4,382,786, Cl. 433-85.000.

Lohn, Gerd: *See*—
Loge, Hans; Kuhn, Bernhard; Bareth, Erich; and Lohn, Gerd, 4,382,790, Cl. 433-126.000.

Lohse, Friedrich; Trachsler, Dieter; and Jeannerat, Claude, to Ciba-Geigy Corporation. Mixture containing N-cyanolactam for the preparation of nitrogen-containing polyadducts. 4,383,107, Cl. 528-323.000.

Long, James L.: *See*—
de Figueiredo, Mario P.; York, Lawrence R.; and Long, James L., 4,382,973, Cl. 426-614.000.

Long, Robert L.: *See*—
Denney, Jerry W.; and Long, Robert L., 4,383,043, Cl. 436-74.000.

Longley, Anthony: *See*—
Gemmell, David; Longley, Anthony; and Irvine, Duncan, 4,383,254, Cl. 340-712.000.

Lotter, Manfred, to Hydromatik GmbH. Support for the drive shaft of an axial-piston machine of an inclined axis construction. 4,382,399, Cl. 91-486.000.

Loveless, Stanley M., to Humphrey Products Company. Exhaust flow control valve for manifold plate. 4,382,452, Cl. 137-625.430.

Lowe, Earl L., to Ball Corporation. Electronic valve assembly for glassware forming machinery. 4,382,451, Cl. 137-596.160.

Lubsen, Timothy A.; and Amerine, James D., to O. M. Scott & Sons Company, The. Liquid applicator. 4,382,552, Cl. 239-317.000.

Lucas, Eugene F.: *See*—
Anderson, David H.; Babbage, Thomas F.; and Lucas, Eugene F., 4,382,484, Cl. 180-165.000.

Lucas Industries Limited: *See*—
Holz, Dietrich, 4,382,494, Cl. 188-79.50P.
Potter, James C., 4,382,751, Cl. 417-462.000.

Luck, Clarence F., Jr., to Raytheon Company. Automatic focusing apparatus. 4,383,168, Cl. 250-201.000.

Ludlow, Jonathan E.; Peake, Cecil V.; and Guay, Paul J., to Foster-Miller Associates, Inc. Longwall mining system. 4,382,633, Cl. 299-33.000.

Lum, Albert C. H., to D.S.L. Inc. Door latch. 4,382,621, Cl. 292-210.000.

Lunardi, Alceste; Villani, Mauro; and Grilli, Walter, to Italtractori.T.M. S.p.A. Storage plant for objects, in particular for track links. 4,382,741, Cl. 414-403.000.

Lunn, Gerald K., to Motorola, Inc. Large scale, single chip integrated circuit television receiver subsystems. 4,383,273, Cl. 358-188.000.

Lunn, William H. W.; and Wheeler, William J., to Eli Lilly and Company. 3'-Substituted quinolinium cephalosporins. 4,382,931, Cl. 424-246.000.

Lunn, William H. W.; and Wheeler, William J., to Eli Lilly and Company. Isoquinolinium substituted cephalosporins. 4,382,932, Cl. 424-246.000.

Lunt, Audrey T. Non-woven polyester wearing apparel. 4,382,303, Cl. 2-114.000.

Luscher, Paul; and Steine, Hans-Theo, to Castolin S.A. Method of producing protective coatings on metal parts to be used in contact with molten glass. 4,382,811, Cl. 65-374.110.

Luwa AG: *See*—
Simmler, Paul, 4,382,401, Cl. 98-40.00C.

Lyndhurst, Francis R., to Aero Power Engine Manufacturing, Inc. Reciprocating engine cooling system. 4,382,427, Cl. 123-41.740.

Lysenko, George P., to Deere & Company. Grapple pivot snubber. 4,382,624, Cl. 294-88.000.

Machamer, Roy J. Timed medication dispenser. 4,382,688, Cl. 368-10.000.

Machut, Dan M., to Digital Equipment Corp. Dual mini-disk drive. 4,383,283, Cl. 360-97.000.

Mack, Alfred; and O'Neill, Brian C., to International Business Machines Corporation. Light actuating force elevator drive mechanism. 4,382,739, Cl. 414-217.000.

MacLean-Fogg Company: *See*—
Synowiec, Stanislaw; and Hlinsky, Emil J., 4,382,734, Cl. 410-70.000.
Synowiec, Stanislaw, 4,382,735, Cl. 410-70.000.

MacLeod, John N., to Tecumseh Products Company. Magneto battery trickle charger. 4,383,214, Cl. 322-58.000.

Madgavkar, Ajay M.; and Swift, Harold E., to Gulf Research & Development Company. Selective coonbusting of hydrogen sulfide in carbon dioxide injection gas. 4,382,912, Cl. 423-224.000.

Maeda, Masaru: *See*—
Haga, Takahiro; Nishikawa, Tetsuji; Nakajima, Toshio; Minamida, Kohji; and Maeda, Masaru, 4,383,116, Cl. 548-367.000.

Maerz Ofenbau AG: *See*—
Fussl, Erwin, 4,382,779, Cl. 432-25.000.

Magori, Valentin: *See*—
Kleinschmidt, Peter; and Magori, Valentin, 4,382,377, Cl. 73-35.000.

Mahrt, Gunter: *See*—
Goldammer, Georg; and Mahrt, Gunter, 4,382,315, Cl. 19-81.000.
Goldammer, Georg; Mahrt, Gunter; and Dammig, Joachim, 4,382,316, Cl. 19-81.000.

Maijer, Rolf: *See*—
Smith, Dennis C.; and Maijer, Rolf, 4,382,792, Cl. 433-217.000.

Makino, Junzo, to RCA Corporation. Video disc player with a freeze frame feature. 4,383,276, Cl. 358-342.000.

Maldonado, Eduardo A. B.: *See*—
Woods, James E., Jr.; and Maldonado, Eduardo A. B., 4,382,437, Cl. 126-433.000.

Malmin, Oscar. Hair replacement method. 4,382,444, Cl. 128-330.000.

Mamiya Koki Kabushiki Kaisha: *See*—
Eguchi, Mitsuo; Kikuchi, Yoshimi; and Ichino, Nobuyuki, 4,382,665, Cl. 354-25.000.

Mandai, Masaaki: *See*—
Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, 4,382,691, Cl. 368-157.000.

Manitowoc Company, Inc., The: *See—*
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,382,519, Cl. 212-195.000.

Mannesmann Aktiengesellschaft: *See—*
Halene, Clemens, 4,382,324, Cl. 29-168.000.
Hendrischk, Wolfgang, 4,382,704, Cl. 400-585.000.
Liedtke, Werner, 4,382,584, Cl. 266-142.000.

Manolescu, Dorin T., to French Jewellery Company of Canada Limited. Jewellery post. 4,383,002, Cl. 428-580.000.

Mansonville Plastics Limited: *See—*
Roy, Richard N.; Labbe, Clerval; and Korman, Albert, 4,382,757, Cl. 425-4.00R.

Mantegani, Sergio: *See—*
Bernardi, Luigi; Bosisio, Germano; Mantegani, Sergio; Rossi, Alessandro; and Temperilli, Aldemio, 4,382,940, Cl. 424-261.000.

Manzolini, David B. Voltage tuned active filter and circuitry simulating a capacitance and an inductance. 4,383,230, Cl. 333-214.000.

Markusch, Peter H.; Potter, Terry A.; Yonek, Kenneth P.; and Rosthauser, James W., to Mobay Chemical Corporation. Storage stable polyurethane compositions. 4,383,070, Cl. 524-317.000.

Marlett, Everett M.: *See—*
Kao, James T. F.; and Marlett, Everett M., 4,383,117, Cl. 548-531.000.

Marshall, Gerald F., to Energy Conversion Devices, Inc. Apparatus for producing microform records from multiple data sources. 4,382,675, Cl. 355-70.000.

Martikainen, Antti L. J.: *See—*
Hakala, Matti A.; Martikainen, Antti L. J.; and Auvinen, Jorma J., 4,382,806, Cl. 55-18.000.

Martin, Charles. Plant watering indicator. 4,382,380, Cl. 73-73.000.

Martin, Henry: *See—*
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,382,893, Cl. 260-465.00D.

Martin Marietta Corp.: *See—*
Nagle, Dennis C.; McCall, Myron T.; and Kim, In H., 4,383,045, Cl. 501-109.000.

Martin, Patrick H.: *See—*
Baker, Alvin W.; DeVellis, Robert; Martin, Patrick H.; and Withers, Robin A., 4,383,056, Cl. 523-328.000.

Martin, Thomas W.; and Sandhu, M. Akram, to Eastman Kodak Company. Color imaging devices having integral color filter arrays. 4,383,018, Cl. 430-14.000.

Martinelli, Ramon U.; Brackelmanns, Norbert W.; and Robinson, Paul H., to RCA Corporation. High-current, high-voltage semiconductor devices having a metallurgical grade substrate. 4,383,268, Cl. 357-34.000.

Martinez, Carlos J.; and Tobias, Michael A., to Mobil Oil Corporation. Stable aqueous poly-(hydroxymethyl methacrylate) dispersions and coating compositions containing same. 4,382,984, Cl. 427-391.000.

Maruhashi, Kenji: *See—*
Kinoshita, Tatsuo; Oguchi, Yutaka; Maruhashi, Kenji; Kojima, Ichiro; Endoh, Noboru; and Satoh, Tetsuo, 4,383,110, Cl. 536-28.000.

Marx, Matthias: *See—*
Nissen, Dietmar; Schmidt, Hans U.; Straehle, Wolfgang; Schuett, Uwe; and Marx, Matthias, 4,383,050, Cl. 521-174.000.

Marzocchi, Alfred: *See—*
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,383,081, Cl. 525-54.500.

Maschinenfabrik Zuckermann Komm. Ges.: *See—*
Schmidt, Erich, 4,382,727, Cl. 409-105.000.

Massachusetts Institute of Technology: *See—*
Pratt, George W., Jr.; and Jain, Kantilal, 4,382,660, Cl. 350-353.000.

Masu, Masanobu: *See—*
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; and Ishiyama, Kozo, 4,383,066, Cl. 524-124.000.

Masuda, Kiyoshi: *See—*
Ishii, Yukihisa; Sakai, Yasuo; Goto, Takao; and Masuda, Kiyoshi, 4,382,953, Cl. 424-285.000.

Masuda, Youichi: *See—*
Onodera, Toshihiro; Masuda, Youichi; and Nakajima, Akira, 4,383,292, Cl. 363-21.000.

Matsumi, Kenzi, to Polyplastics Co., Ltd. Polyacetal resin molded article having reduced water contamination. 4,382,994, Cl. 428-411.000.

Matsumiya, Toshiharu: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,382,996, Cl. 428-442.000.

Matsumoto, Jun-ichi; and Nakamura, Shinichi, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Naphthyridine derivatives and their use as anti-bacterials. 4,382,937, Cl. 424-256.000.

Matsumura, Sadao; Fukuta, Katsuyoshi; and Hirano, Hitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pyroelectric detector and method for manufacturing the same. 4,383,174, Cl. 250-338.000.

Matsumura, Yasushi: *See—*
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, 4,382,967, Cl. 426-96.000.

Matsuoka, Michio: *See—*
Eda, Kazuo; Kikuchi, Yasuharu; and Matsuoka, Michio, 4,383,237, Cl. 338-21.000.

Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, to Hitachi, Ltd. Door operation control apparatus. 4,383,206, Cl. 318-445.000.

Matsushima, Yuichi: *See—*
Sakai, Kazuo; Matsushima, Yuichi; Akiba, Shigeyuki; and Yamamoto, Takaya, 4,383,266, Cl. 357-13.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,382,454, Cl. 138-140.000.
Eda, Kazuo; Kikuchi, Yasuharu; and Matsuoka, Michio, 4,383,237, Cl. 338-21.000.
Itoh, Masashi, 4,383,310, Cl. 369-136.000.
Kohashi, Tadao, 4,383,265, Cl. 346-140.00R.
Niwa, Takeshi, 4,383,158, Cl. 219-10.55B.
Shimizu, Hirokazu; Wada, Masaru; Sugino, Takashi; and Itoh, Kunio, 4,383,319, Cl. 372-45.000.
Yamada, Noboru; Takenaga, Mutsuo; and Nishiuchi, Kenichi, 4,383,029, Cl. 430-541.000.

Matthews, Edgar W., Jr.: *See—*
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., 4,383,226, Cl. 333-33.000.

Maurer, Fritz; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Combating pests with N-methyl-carbamic acid O-pyrazol-4-yl esters. 4,382,947, Cl. 424-273.00P.

Maury, Christian, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Society Anonyme). Apparatus and method for displacing movable system with respect to a data carrier. 4,383,207, Cl. 318-560.000.

Mausezahl, Dieter: *See—*
de Montmollin, Rene; and Mausezahl, Dieter, 4,382,890, Cl. 260-156.000.

Mayer, Dieter: *See—*
Schieber, Franz; and Mayer, Dieter, 4,383,321, Cl. 373-88.000.

Mayer, Ernest, to Pfizer Inc. Synthetic rhombohedral magnetite pigment. 4,382,822, Cl. 106-304.000.

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McFarland, Harry G., to Texas Instruments Incorporated. Power controller. 4,383,184, Cl. 307-66.000.

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Meckler, Milton. Prismatic tracking insolation collector. 4,382,434, Cl. 126-425.000.

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Mellor, Fred. Fluid/particle separator unit and method for separating particles from a flowing fluid. 4,382,804, Cl. 55-1.000.
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Meyborg, Holger; Wagner, Kuno; Barnes, James M.; and Salzburg, Herbert, to Bayer Aktiengesellschaft. Process for the preparation of polyurethane plastics using dianhydro-hexite diols. 4,383,051, Cl. 521-176.000.
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Middleton, William J., to Du Pont de Nemours, E. I., and Company. Use of fluoroalkoxysulfur fluorides in fluorinations. 4,382,891, Cl. 260-239.30D.
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Morita, Deen I.; and Nakasone, George M. Measuring and calculating instrument. 4,383,301, Cl. 364-562.000.

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Morong, William H., III, to Analog Devices, Incorporated. Half-wave signal isolator with compensator means to reduce temperature-dependent effects. 4,383,222, Cl. 330-9.000.

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Morris, Lawrence J., to Corning Limited. Safety locking arrangement. 4,382,579, Cl. 251-214.000.

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Moudgil, Brij M., to Occidental Research Corp. Separation of limestone from limestone ore. 4,382,515, Cl. 209-3.300.

Mouton, Ralph O. Athletic discus retriever. 4,382,742, Cl. 414-439.000.

Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, to Pierre Fabre S.A. 2'-(Orthochlorobenzoyl)-4'-chloroglycylanilides, compositions thereof, and use as medicaments. 4,382,930, Cl. 424-248.540.

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Nagayoshi, Tatsuo: *See*—
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Nagle, Dennis C.; McCall, Myron T.; and Kim, In H., to Martin Marietta Corp. Magnesia refractories bonded with sulfamic acid. 4,383,045, Cl. 501-109.000.

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Onodera, Toshihiro; Masuda, Youichi; and Nakajima, Akira, 4,383,292, Cl. 363-21.000.

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Haga, Takahiro; Nishikawa, Tetsuji; Nakajima, Toshio; Minamida, Kohji; and Maeda, Masaru, 4,383,116, Cl. 548-367.000.
Nakamaru, Kazuto: *See*—
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Nakamura, Akiyoshi: *See*—
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Nakamura, Isa: *See*—
Tsuchiya, Takao; Soneda, Mitsuo; and Nakamura, Isa, 4,383,326, Cl. 377-61.000.
Nakamura, Nobuo: *See*—
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Nakamura, Shinichi: *See*—
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Nakamura, Takashi: *See*—
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Nakamura, Zenzo: *See*—
Ohtaki, Shohei; Nakamura, Zenzo; and Nagase, Naoki, 4,382,666, Cl. 354-33.000.
Nakanishi, Joshiharu: *See*—
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Nakanishi, Tosaku: *See*—
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Nakasone, George M.: *See*—
Morita, Deen I.; and Nakasone, George M., 4,383,301, Cl. 364-562.000.
Nakata, Takeshi; Takase, Hitoshi; and Horinouchi, Atsushi, to Sanyo Electric Co., Ltd. Electronic controlled heat cooking apparatus and method of controlling thereof. 4,383,157, Cl. 219-10.55B.
Nalco Chemical Company: *See*—
Kugel, Roger W., 4,382,699, Cl. 374-46.000.
Namiki, Ko; Iguchi, Tokio; Haga, Fumio; and Ishikawa, Masanobu, to Honda Giken Kogyo Kabushiki Kaisha. Rack and pinion gearing. 4,382,389, Cl. 74-422.000.
Namiki, Takayuki: *See*—
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Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., to International Paper Company. Apparatus for making container for storing food. 4,382,767, Cl. 425-504.000.
Naujoks, Manfred; and Hantel, Gerhard, to Technik mbH GHT, Gesellschaft fur Hochtemperaturreaktor. Vessel or tank bottom for a pebble-bed reactor. 4,383,325, Cl. 376-381.000.
NCR Corporation: *See*—
Romano-Moran, Roberto; and Brower, Ronald W., 4,382,827, Cl. 148-1.500.
Neal, James V., Jr.: *See*—
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Neal, Jesse R., Jr.; Bleile, Henry R.; and Humphries, Truman W., to United States of America, Navy. Epoxy smoothing compound. 4,383,061, Cl. 523-458.000.
Nedeczky nee Gardy, Margit; and Kiraly, Gyorgy. Cosmetic preparation and process for preparing same. 4,382,961, Cl. 424-364.000.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. 3-(1,2,5,6-Tetrahydropyridin-3-yl)-phenols and their use in pharmaceutical compositions. 4,382,942, Cl. 424-263.000.
Neil, Iain A.; McLean, Gordon H.; and Berry, Peter J., to Barr & Stroud Limited. Infrared radiation detecting systems. 4,383,173, Cl. 250-330.000.
Nelson, Daniel E.: *See*—
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Nelson, Gale C.: *See*—
Bardens, William H.; and Nelson, Gale C., 4,382,327, Cl. 29-588.000.
Nelson, Robert T. Apparatus for cleaning surfaces, including means for separating debris and abrasive material. 4,382,352, Cl. 51-424.000.
Nelson, Wesley C. Magnetically resettable emergency shut-off valve. 4,382,449, Cl. 137-38.000.
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Netravali, Arun N.; and Robbins, John D., to Bell Telephone Laboratories, Incorporated. Video signal interpolation using motion estimation. 4,383,272, Cl. 358-136.000.
Neubold, Kurt; and Gollmer, Klaus-Dieter. Method for producing catalysts for gas phase oxidation of saturated and/or unsaturated C_4-hydrocarbons to maleic anhydride. 4,382,876, Cl. 252-435.000.
Neudecker, Karl, to Agfa-Gevaert Aktiengesellschaft. Diaprojector. 4,382,663, Cl. 353-104.000.
Neufeld, Henry L., to Brunswick Corporation. Finger brake for a spinning reel and method of assembling same. 4,382,562, Cl. 242-84.20A.
Neulinger, Franz: *See*—
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Newell, Lawrence H. Loading apparatus with a tiltable and extendable fork carriage mounted thereon. 4,382,743, Cl. 414-692.000.
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Niederer, Lee H.: *See*—
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Niederer, Thomas O.; and Niederer, Lee H., to Otto Niederer Sons, Inc. Egg orientation means. 4,382,501, Cl. 198-384.000.
Nielinger, Werner; Brassat, Bert; Binsack, Rudolf; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polyamide moulding composition. 4,383,083, Cl. 525-183.000.
Nielson, Marlin C., to International Business Machines Corporation. Dynamic determination of friction in a closed loop control system. 4,383,208, Cl. 318-618.000.
Nippon Engelhard, Ltd.: *See*—
Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, 4,382,879, Cl. 252-457.000.
Nippon Fine Chemical Company, Ltd.: *See*—
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Nippon Kogaku K.K.: *See*—
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Nippon Oil Company, Ltd.: *See*—
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Nippon Oil and Fats Co., Ltd.: *See*—
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Nippon Soken, Inc.: *See*—
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Shindo, Yoshio; Tamura, Teppei; Kabeya, Motoo; Nagahisa, Mitsumasa; and Asano, Hidejirou, 4,383,006, Cl. 428-659.000.
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Nippondenso Co. Ltd.: *See*—
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Nishihara, Koji; Hashimoto, Takeshi; Tanaka, Shunsaku; and Sato, Katsuhiko, to Sugai Chemical Industry Co., Ltd. Process for producing 4,4'-diphenyldisulfonic acid and its monopotassium salt. 4,382,896, Cl. 260-505.00C.
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Nissen, Dietmar; Schmidt, Hans U.; Straehle, Wolfgang; Schuett, Uwe; and Marx, Matthias, to BASF Aktiengesellschaft. Process for the preparation of low temperature flexible polyurethane elastomers. 4,383,050, Cl. 521-174.000.
Niwa, Takeshi, to Matsushita Electric Industrial Co., Ltd. Cooking oven with multi-function gas sensor. 4,383,158, Cl. 219-10.55B.
Nixdorf Computer AG: *See*—
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Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, to Kikkoman Corporation. Process for producing soy sauce or Miso. 4,382,964, Cl. 426-7.000.
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Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Laser data recording method. 4,383,262, Cl. 346-1.100.

Nopper, Herbert; and Knoch, Wolfgang, to Casimir Kast GmbH & Co. KG. Apparatus for manufacturing cellulosic fibrous material which can be pressed into molded parts. 4,382,758, Cl. 425-82.100.
Noranda Mines Limited: *See*—
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North American Philips Corporation: *See*—
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Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, to Pioneer Electronic Corporation. Muting circuit for AM stereophonic receiver. 4,383,136, Cl. 179-1.0GS.
Nygren, Evert C.; Han, Ching C.; Matthews, Edgar W., Jr.; Kelly, Jack E.; and Frank, Paul D., to Ford Aerospace & Communications Corporation. Orthogonal launcher for dielectrically supported air stripline. 4,383,226, Cl. 333-33.000.
O. M. Scott & Sons Company, The: *See*—
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Obara, Haruki, to Fujitsu Fanuc Limited. Automatic cutting condition changeover equipment. 4,383,160, Cl. 219-69.00W.
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Ohigashi, Hiroji; Nakanishi, Joshiharu; and Suzuki, Miyo, to Toray Industries, Inc. Electro-acoustic transducer element. 4,383,194, Cl. 310-326.000.
Ohnuma, Teruyuki; Miyakawa, Seiichi; Mochizuki, Nobuo; Oyama, Hajime; and Tabata, Yukio, to Ricoh Company, Ltd. Development apparatus. 4,382,420, Cl. 118-651.000.
Ohta, Koichiro; and Kitai, Makoto, to Dainippon Screen Seizo Kabushiki Kaisha. Positioning machine of original films on a base sheet. 4,382,676, Cl. 355-75.000.
Ohta, Takashi: *See*—
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Ohtaki, Shohei; Nakamura, Zenzo; and Nagase, Naoki, to Canon Kabushiki Kaisha. Indicating device for computer type electronic flash apparatus. 4,382,666, Cl. 354-33.000.
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Ohtsuki, Masataka: *See*—
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Okano, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Compressor of a turbocharger. 4,382,747, Cl. 415-207.000.
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Olivieri, Icaro, to Warrington, Inc. Skate blade guard. 4,382,616, Cl. 280-825.000.
Olsen, Eric G.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Linear hydroquinone phenoxy polymers and process. 4,383,101, Cl. 528-93.000.
Olson, Theodore V. Central-pillar assemblies for center-pivot irrigation apparatuses. 4,382,550, Cl. 239-177.000.
Olympia Werke AG: *See*—
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O'Neill, R. Michael, to Peavey Electronics Corp. Method and apparatus for eliminating feedback in stage monitors. 4,382,398, Cl. 84-1.190.
Ono, Keiichi: *See*—
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Ono, Masamichi, to Kabushiki Kaisha Ono Sokki. Dynamometer road simulating method and system. 4,382,388, Cl. 73-861.180.
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Kurachi, Hisao; Itoh, Takeo; Onoda, Hiroshi; Okado, Kiyomichi; and Kuzuya, Susumu, 4,382,705, Cl. 400-697.100.
Onodera, Toshihiro; Masuda, Youichi; and Nakajima, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Single-ended switching converter. 4,383,292, Cl. 363-21.000.
Orbit BBQ Products Ltd.: *See*—
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Osanai, Akira, to Olympus Optical Co., Ltd. Capstan drive type magnetic recording tape drive apparatus. 4,383,282, Cl. 360-96.300.
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Ostrowsky, Efrem M., to Ethyl Products Company. Vented closure. 4,382,521, Cl. 215-307.000.
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Ouellette, Joseph F., to Ouellette Machinery Systems, Inc. Drive train apparatus. 4,382,490, Cl. 187-32.000.
Ouellette Machinery Systems, Inc.: *See*—
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Oyama, Tadao; and Ohta, Takashi, to Hitachi, Ltd. Conveyor system for conveying panels and shadow masks. 4,382,500, Cl. 198-346.000.
Ozawa, Masakazu; Watanabe, Kunio; Kojima, Kiyohide; Seito, Shinichi; and Miyazaki, Takashi, to Canon Kabushiki Kaisha. Liquid ejecting apparatus having a suction mechanism. 4,383,263, Cl. 346-140.00R.
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Paley, Gary, to Square D Company. Swivel unit for adjustable lighting fixture. 4,382,647, Cl. 339-7.000.
Palmer, David N., to Combustion Engineering, Inc. Organic polymer layered trichalcogenides. 4,383,087, Cl. 525-274.000.

Palmer, David N., to Combustion Engineering, Inc. Organic polymer layered dichalcogenides. 4,383,088, Cl. 525-274.000.

Palmgren, Curtis M., to Boeing Company, The. Staggered seats in seating units for passenger compartments. 4,382,628, Cl. 297-232.000.

Pandya, Mahendra K.; and Vega, Manuel G. Plate cutting frame. 4,382,590, Cl. 269-87.200.

Parenteau, Robert: *See*—
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Parker, Phillip H.: *See*—
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Paros, Jerome M., to Paroscientific, Inc. Digital differential pressure transducer. 4,382,385, Cl. 73-702.000.

Paroscientific, Inc.: *See*—
Paros, Jerome M., 4,382,385, Cl. 73-702.000.

Paschke, Edward F.; Stasi, Michael A.; and Rader, Edward F., to Standard Oil Company (Indiana). Polyamide-polyolefin compositions. 4,383,084, Cl. 525-184.000.

Patel, Naren I.: *See*—
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Patisaul, Charles R.: *See*—
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Patton, Tad L., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with phosphate esters. 4,383,067, Cl. 524-141.000.

Paul, Volker: *See*—
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,382,933, Cl. 424-248.400.
Kuhle, Engelbert; Paul, Volker; and Brandes, Wilhelm, 4,382,956, Cl. 424-322.000.

Peacey, John G.; Crowell, William F.; and Whitmore, Peter, to Noranda Mines Limited. Method and apparatus for reducing excess air inleakage into an open ring-type carbon baking furnace. 4,382,778, Cl. 432-18.000.

Peake, Cecil V.: *See*—
Ludlow, Jonathan E.; Peake, Cecil V.; and Guay, Paul J., 4,382,633, Cl. 299-33.000.

Pearse, Michael T.: *See*—
Tissington, Peter; Giddings, Rodney M.; and Pearse, Michael T., 4,382,894, Cl. 260-465.00D.

Pearson, James M., to Techne (Cambridge) Limited. Method and apparatus for stirring particles in suspension such as microcarriers for anchorage-dependent living cells in a liquid culture medium. 4,382,685, Cl. 366-241.000.

Peavey Electronics Corp.: *See*—
O'Neill, R. Michael, 4,382,398, Cl. 84-1.190.

Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Polyurethanes from oligomeric formal diols of THF copolymer glycols. 4,383,100, Cl. 528-76.000.

Pelerin, Joseph J. Working well. 4,382,788, Cl. 433-77.000.

Pennell, Anthony R.; and Carpenter, John, to Blue Circle Industries Limited. Hydration of lime. 4,382,911, Cl. 423-175.000.

Perduijn, David J.; and Verberkt, Jacobus, to U.S. Philips Corporation. Piezoelectric ceramic body for an electromechanical transducer. 4,383,196, Cl. 310-358.000.

Perelli, David E.; Perelli, Stephen J.; and Jenkins, John B., II. Timed smoke detection. 4,383,251, Cl. 340-527.000.

Perelli, Stephen J.: *See*—
Perelli, David E.; Perelli, Stephen J.; and Jenkins, John B., II, 4,383,251, Cl. 340-527.000.

Perignon Investments Ltd.: *See*—
Reinhard, Friedrich G., 4,382,920, Cl. 424-177.000.

Perkins, Arthur G., deceased: *See*—
Raab, Andrew F.; and Perkins, Arthur G., deceased, 4,383,147, Cl. 200-50.00C.

Perkins, Ruth, executrix: *See*—
Raab, Andrew F.; and Perkins, Arthur G., deceased, 4,383,147, Cl. 200-50.00C.

Permclip Products Corporation: *See*—
Corey, Joseph T., 4,382,708, Cl. 402-15.000.

Perry, William O.: *See*—
Wessling, Ritchie A.; Yats, Larry D.; and Perry, William O., 4,383,073, Cl. 525-486.000.

Persson, Lars E.: *See*—
Gronborg, Jan L.; and Persson, Lars E., 4,382,615, Cl. 280-825.000.

Perucchi, Norberto: *See*—
Giger, Urs; and Perucchi, Norberto, 4,382,686, Cl. 368-187.000.

Petersen, Klaus, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. After-heat removal system for a gas-cooled nuclear reactor. 4,382,908, Cl. 376-299.000.

Peterson, Charles L., to Idaho Research Foundation, Inc. Low damage beet cleaner and elevator. 4,382,471, Cl. 171-124.000.

Petranyi, Gabor: *See*—
Grassberger, Maximilian; and Petranyi, Gabor, 4,382,951, Cl. 424-275.000.

Petrolite Corporation: *See*—
Jenkins, Fred W., 4,382,874, Cl. 252-329.000.

Pettersson, Bjorn O. A., to AB Carbox. Apparatus for calibrating tubular articles. 4,382,373, Cl. 72-57.000.

Pfizer Inc.: *See*—
Mayer, Ernest, 4,382,822, Cl. 106-304.000.

Pfleiderer, Hans-Jorg; and Widmann, Dietrich, to Siemens Aktiengesellschaft. Method of making MIS-field effect transistor having a short channel length. 4,382,826, Cl. 148-1.500.

Pflugfelder, Karl, to Audi NSU Auto Union Aktiengesellschaft. Fastening device for a roof rack for luggage. 4,382,532, Cl. 224-331.000.

Phebus, Robert E.: *See*—
Thompson, Henry A.; Kottman, Clifford; Mueller, Walter H.; and Phebus, Robert E., 4,382,678, Cl. 356-150.000.

Philips, Gary, to Airway Industries, Inc. Molded shells for luggage and the like. 4,383,143, Cl. 190-53.000.

Philipson, Joseph: *See*—
Hall, Charles P.; and Philipson, Joseph, 4,382,305, Cl. 5-451.000.

Phillips, Albert A. Railroad tie plate and correctable shim. 4,382,547, Cl. 238-303.000.

Phillips Petroleum Company: *See*—
Dupree, Robert L., 4,383,080, Cl. 525-537.000.
Sadhukhan, Pasupati; and Billings, William G., 4,382,915, Cl. 423-415.00A.

Philp, John: *See*—
Gratzel, Michael; Kiwi, John; Kalyanasundaram, Kuppuswamy; and Philp, John, 4,382,846, Cl. 204-157.10R.

Piduch, Hans-Gunter: *See*—
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Weiershausen, Rolf, 4,382,842, Cl. 202-263.000.

Pierre Fabre S.A.: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,382,930, Cl. 424-248.540.

Pietryka, Joseph; Cazaux, Joel; and Guyot, Andre, to Fives-Cail Babcock. Unit in a continuous casting installation for positioning a dummy bar. 4,382,462, Cl. 164-426.000.

Piezo Electric Products, Inc.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,383,195, Cl. 310-330.000.

Pike, Robert W.: *See*—
Purcell, Harold F.; Lattanzi, William E.; and Pike, Robert W., 4,383,252, Cl. 340-606.000.

Pinckaers, B. Hubert, to Honeywell Inc. Safe start fuel burner control system. 4,382,770, Cl. 431-26.000.

Pines, Richard J.: *See*—
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,382,767, Cl. 425-504.000.

Pioneer Electronic Corporation: *See*—
Hirashima, Kunihiko, 4,383,304, Cl. 364-715.000.
Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, 4,383,136, Cl. 179-1.0GS.

Piskorz, Ronald F.: *See*—
Van Der Puy, Michael; and Piskorz, Ronald F., 4,383,128, Cl. 570-165.000.

Pitts, Charlie C. Dumping vehicle stabilizer system. 4,382,632, Cl. 298-17.00S.

Plath, Dieter: *See*—
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, 4,383,055, Cl. 523-221.000.

Plessey Overseas Limited: *See*—
Wheatley, Nigel J.; and Andrews, Martyn P., 4,383,297, Cl. 364-200.000.

Plessis, Andree: *See*—
Gatellier, Claude; Plessis, Andree; Gateau, Patrick; and Durand, Jean-Pierre, 4,382,873, Cl. 252-312.000.

Pluta, Paul L.: *See*—
Bujan, Albert F.; and Pluta, Paul L., 4,382,453, Cl. 138-40.000.

Pneumo Corporation: *See*—
Vanderlaan, Robert D., 4,382,748, Cl. 417-11.000.

Pogontchef, Robert Y.: *See*—
Bell, Christy W.; Titus, Charles H.; and Pogontchef, Robert Y., 4,382,341, Cl. 34-1.000.

Polaroid Corporation: *See*—
Berger, Michael, 4,383,022, Cl. 430-228.000.

Pollman, Gary A., to PPG Industries, Inc. Sizing composition and sized strand useful as reinforcement. 4,382,991, Cl. 428-391.000.

Polyplastics Co., Ltd.: *See*—
Matsumi, Kenzi, 4,382,994, Cl. 428-411.000.

Porter, William F.; Schwab, Shirley J.; and Schneider, Karl E., to United States Gypsum Company. Method and apparatus for the production of mineral fiber felts having fiber-leveling device. 4,382,809, Cl. 65-4.400.

Possati, Mario; Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs S.p.A. Manual plug comparator for checking the diameter of holes. 4,382,338, Cl. 33-178.00E.

Postupack, Dennis S., to PPG Industries, Inc. Method for repairing glass photomasks. 4,383,016, Cl. 430-5.000.

Potter, James C., to Lucas Industries Limited. Fuel pumping apparatus. 4,382,751, Cl. 417-462.000.

Potter, Terry A.: *See*—
Markusch, Peter H.; Potter, Terry A.; Yonek, Kenneth P.; and Rosthauser, James W., 4,383,070, Cl. 524-317.000.

Power Systems & Controls, Inc.: *See*—
Harris, Charles W.; and Gregory, Charles A., 4,383,302, Cl. 364-565.000.

PPG Industries, Inc.: *See*—
Pollman, Gary A., 4,382,991, Cl. 428-391.000.
Postupack, Dennis S., 4,383,016, Cl. 430-5.000.

Pratt, George W., Jr.; and Jain, Kantilal, to Massachusetts Institute of Technology. Optical transistors and logic circuits embodying the same. 4,382,660, Cl. 350-353.000.

Preus, Ann M. Instructional aid. 4,382,794, Cl. 434-193.000.

Price, Barry J.: *See*—
Bradshaw, John; Judd, Duncan B.; Price, Barry J.; and Clitherow, John W., 4,382,929, Cl. 424-246.000.

Procter & Gamble Company, The: *See*—
Berling, Kenneth G.; and Crosby, Thomas G., 4,382,924, Cl. 424-180.000.
Propst, Robert L.; and Randolph, Travis M., to Herman Miller, Inc. Electrical energy supply system for work stations in a space divider system. 4,382,648, Cl. 339-18.00P.
Pruitt, Gary L.: *See*—
Mickus, James C.; Hesse, Robert L.; and Pruitt, Gary L., 4,382,966, Cl. 426-69.000.
Puff, Roger M.: *See*—
Delessard, Serge L. J. E.; Puff, Roger M.; and Kita, Jean-Claude, 4,382,777, Cl. 432-15.000.
Pullukat, Thomas J.; and Hoff, Raymond E., to Chemplex Company. Organomagnesium compounds. 4,383,119, Cl. 556-412.000.
Pullukat, Thomas J.: *See*—
Shida, Mitsuzo; Pullukat, Thomas J.; and Hoff, Raymond E., 4,383,096, Cl. 526-129.000.
Purcell, Harold F.; Lattanzi, William E.; and Pike, Robert W. Intravenous drip feed monitor. 4,383,252, Cl. 340-606.000.
Quaker Oats Company, The: *See*—
Menting, James E., 4,383,098, Cl. 526-270.000.
R & G Mold Company Inc.: *See*—
Schepp, Frank, 4,382,762, Cl. 425-142.000.
Raab, Andrew F.; and Perkins, Arthur G., deceased (by Perkins, Ruth, executrix), to Indak Manufacturing Corp. Electrical switch having interlocked blower and air conditioner switch components for vehicles. 4,383,147, Cl. 200-50.00C.
Rabuse, George R., to Minnesota Mining & Manufacturing Company. Staple supporting and staple removing strip. 4,382,326, Cl. 29-270.000.
Radcal Corporation: *See*—
Sunde, Paul B., 4,382,646, Cl. 445-41.000.
Rader, Carl J., to World Navigation Electronics Inc. Marine navigational aid. 4,383,259, Cl. 343-103.000.
Rader, Edward F.: *See*—
Paschke, Edward F.; Stasi, Michael A.; and Rader, Edward F., 4,383,084, Cl. 525-184.000.
Radiochemical Centre Ltd., The: *See*—
Furminger, Ronald J., 4,382,512, Cl. 206-446.000.
Radisek, Theodore: *See*—
Vovk, Marko E.; and Radisek, Theodore, 4,382,588, Cl. 269-43.000.
Raffelsberger, Peter W.: *See*—
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.
Ralston Purina Company: *See*—
de Figueiredo, Mario P.; York, Lawrence R.; and Long, James L., 4,382,973, Cl. 426-614.000.
Randall, Ronald H., to Acme Electric Corporation. Isolated DC current sense circuit. 4,383,293, Cl. 363-25.000.
Randlov, Sven-Age: *See*—
Jensen, Finn U. H.; and Randlov, Sven-Age, 4,382,474, Cl. 172-179.000.
Randolph, Travis M.: *See*—
Propst, Robert L.; and Randolph, Travis M., 4,382,648, Cl. 339-18.00P.
Rapp, Willard E., to Western Electric Co., Inc. Wrapping of insulated wire. 4,382,456, Cl. 140-123.000.
Rappange, Adelbert: *See*—
Koppl, Georg; and Rappange, Adelbert, 4,383,152, Cl. 200-148.00R.
Rauch, Jeffrey S., to Mechanical Technology Incorporated. Stirling engine displacer suspension system. 4,382,363, Cl. 60-520.000.
Ray, Louis F. Barge unloading terminal. 4,382,418, Cl. 114-263.000.
Raychem Limited: *See*—
Clabburn, Robin J. T., 4,383,131, Cl. 174-73.00R.
Raytheon Company: *See*—
Luck, Clarence F., Jr., 4,383,168, Cl. 250-201.000.
RCA Corporation: *See*—
Barkow, William H., 4,383,233, Cl. 335-213.000.
Botez, Dan; and Butler, Jerome K., 4,383,320, Cl. 372-45.000.
Coyle, Peter J.; and Crouthamel, Marvin S., 4,382,833, Cl. 156-382.000.
Ettenberg, Michael, 4,383,311, Cl. 369-275.000.
Makino, Junzo, 4,383,276, Cl. 358-342.000.
Martinelli, Ramon U.; Brackelmanns, Norbert W.; and Robinson, Paul H., 4,383,268, Cl. 357-34.000.
Schelhorn, Robert L., 4,383,270, Cl. 357-71.000.
Webb, Paul P., 4,383,267, Cl. 357-30.000.
Reclamet, Inc.: *See*—
Dudley, Robert H., 4,382,858, Cl. 209-136.000.
Redmon, David T.: *See*—
Schmit, Frank L.; Redmon, David T.; and Ewing, Lloyd, 4,382,867, Cl. 210-754.000.
Redston, John P.: *See*—
McIntyre, Russell T.; and Redston, John P., 4,382,993, Cl. 428-395.000.
Reed, Robert C., to United States of America, Navy. Multiplex system tester. 4,383,312, Cl. 370-13.000.
Reeder, Frank: *See*—
Brook, Basil W.; and Reeder, Frank, 4,383,059, Cl. 523-412.000.
Rees, Richard W., to Du Pont de Nemours, E. I., and Company. Polyvinyl alcohol based size composition. 4,383,063, Cl. 524-91.000.
Reese, Thurston F. Metal cooling bed for controlling rate of cooling. 4,382,586, Cl. 266-259.000.
Reinhard, Friedrich G., to Perignon Investments Ltd. Hormone-like peptides and use thereof. 4,382,920, Cl. 424-177.000.
Reinisch, Rudolf. Pneumatically operated spindle wrench. 4,382,730, Cl. 409-233.000.
Reinsma, Harold L.: *See*—
Fox, Lawrence E.; Reinsma, Harold L.; and Woody, Albert L., 4,382,634, Cl. 299-37.000.
Reinwart, Robert E.: *See*—
Hess, George E.; Donnelly, Donald E.; and Reinwart, Robert E., 4,382,433, Cl. 126-113.000.
Reitberger, Torbjorn: *See*—
Akesson, Arne; and Reitberger, Torbjorn, 4,382,847, Cl. 204-159.120.
Rennie, William A.: *See*—
Sassover, Nathan; and Rennie, William A., 4,383,242, Cl. 340-64.000.
Restall, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of forming corrosion resistant coatings on metal articles. 4,382,976, Cl. 427-34.000.
Retz, Philip. Vortex turbine apparatus. 4,382,746, Cl. 415-202.000.
Reuben, Harold, to Akro Corporation, The. Automobile floor mat with two base portions of different elastomeric materials. 4,382,986, Cl. 428-88.000.
Reynolds, Michael J., to Omark Industries, Inc. Chain saw device. 4,382,334, Cl. 30-386.000.
Rheinisch-Westfalisches Elektrizitatswerk AG: *See*—
Ambros, Rainer; and Paffrath, Gottfried, 4,382,906, Cl. 376-247.000.
Rhone-Poulenc Agrochimie: *See*—
Abblard, Jean; Gaulliard, Jean-Michel; and Lacroix, Guy, 4,382,928, Cl. 424-211.000.
Bahr, James T., 4,382,816, Cl. 71-90.000.
Gough, Stanley T. D., 4,382,815, Cl. 71-90.000.
Steffens, James J., 4,382,814, Cl. 71-88.000.
Rhone-Poulenc Industries: *See*—
Derrien, Jean-Yves, 4,382,880, Cl. 252-465.000.
Locatelli, Jean-Louis; and Soula, Gerard, 4,383,118, Cl. 549-517.000.
Richardson, Charles N., to Tri-State Oil Tool Industries, Inc. Apparatus for retrieving fluid plug. 4,382,623, Cl. 294-86.320.
Richert, Walter J., to AMF Incorporated. Low profile relay. 4,383,232, Cl. 335-202.000.
Ricoh Company, Ltd.: *See*—
Kubo, Kikuo, 4,383,277, Cl. 358-258.000.
Ohnuma, Teruyuki; Miyakawa, Seiichi; Mochizuki, Nobuo; Oyama, Hajime; and Tabata, Yukio, 4,382,420, Cl. 118-651.000.
Rigdon, Russell L. Rotary machining apparatus. 4,382,731, Cl. 409-248.000.
Riise, Morris M., to International Sludge Reduction Company. Sludge dewatering system. 4,382,863, Cl. 210-702.000.
Rinaldi, Joseph; and Wuthrich, Paul, to Timex Corporation. Thin movement for stepping motor watch. 4,382,695, Cl. 368-220.000.
Ritsema, Irving R., to Bendix Corporation, The. Disc brake having a piston retraction assembly. 4,382,492, Cl. 188-71.800.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides affecting gonadal function. 4,382,922, Cl. 424-177.000.
Roach, Jerome C.: *See*—
Teegarden, Arlo F.; and Roach, Jerome C., 4,382,749, Cl. 417-295.000.
Robbins, John D.: *See*—
Netravali, Arun N.; and Robbins, John D., 4,383,272, Cl. 358-136.000.
Robbins, Roberta; and Henson, William E., to American Western Industries, Inc. Packaging and environmental treatment container system. 4,382,508, Cl. 206-216.000.
Robert Bosch GmbH: *See*—
Bodig, Bernd; and Jundt, Werner, 4,382,431, Cl. 123-644.000.
Frister, Manfred, 4,383,215, Cl. 322-63.000.
Hofmann, Karl, 4,382,554, Cl. 239-533.900.
Schadlich, Fritz; Armbruster, Gerhard; and Jaspert, Klaus-Dieter, 4,382,458, Cl. 144-230.000.
Robert, Richard C., to Compagnie Generale d'Automatisme. Detector for detecting the passage of heavy objects on a roadway. 4,383,239, Cl. 340-38.00R.
Roberts, Ian D., to University of Melbourne, The. Control of vapor compression cycles of refrigeration systems. 4,382,367, Cl. 62-197.000.
Roberts, Sidney J.; and Dowdle, Deanna M., to Sheldahl, Inc. Preparation of photoconductive film using radiation curable resin. 4,383,020, Cl. 430-127.000.
Roberts, Victor D., to General Electric Company. Three-level interface control circuit for electronically ballasted lamp. 4,383,204, Cl. 315-291.000.
Robertson, Walter W.; and Robertson, Walter W., Jr., to Hydro-Pac, Inc. High pressure fluid pump. 4,382,750, Cl. 417-397.000.
Robertson, Walter W., Jr.: *See*—
Robertson, Walter W.; and Robertson, Walter W., Jr., 4,382,750, Cl. 417-397.000.
Robin, Marcel, to Commissariat a l'Energie Atomique. Liquid metal cooled nuclear reactor. 4,382,907, Cl. 376-283.000.
Robinson, John M.: *See*—
Dudek, Michael T.; and Robinson, John M., 4,383,324, Cl. 375-76.000.

Robinson, Paul H.: *See*—
Martinelli, Ramon U.; Brackelmanns, Norbert W.; and Robinson, Paul H., 4,383,268, Cl. 357-34.000.
Rockwell International Corporation: *See*—
Brown, Donald G., 4,382,709, Cl. 403-57.000.
Jones, Addison B., 4,382,975, Cl. 427-8.000.
Rodgers, Kenneth G. Freight cradle with replaceable deformable cushioning insert. 4,382,733, Cl. 410-49.000.
Roesch, Androniki: *See*—
Winter, Werner; Friebe, Walter-Gunar; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,382,943, Cl. 424-267.000.
Roess, Dieter; and Hartig, Wolfgang, to Erwin Sick GmbH Optik-Elektronik. Method and apparatus for analyzing a gaseous mixture. 4,383,181, Cl. 250-573.000.
Rogahn, Gunther: *See*—
Bisk, Leonard; and Rogahn, Gunther, 4,382,531, Cl. 223-91.000.
Rohringer, Peter; and Berini, Rene, to Ciba-Geigy Corporation. Fire-retardant, intumescent composition and its use for the flameproofing of substrates, and as a fire-extinguishing agent comprising an ammonium salt, a water-soluble nitrogen compound as a blowing agent and dextrin. 4,382,884, Cl. 252-606.000.
Roller, Donald C.: *See*—
Harding, Steven R.; Lamos, Richard A.; and Roller, Donald C., 4,382,592, Cl. 270-53.000.
Rolls-Royce Limited: *See*—
Kwan, William C. T., 4,382,534, Cl. 228-161.000.
Romada Holdings Ltd.: *See*—
Smith, Dennis C.; and Maijer, Rolf, 4,382,792, Cl. 433-217.000.
Romagnoli, Andrea, to I.M.A. - Industria Macchine Automatiche S.p.A. Apparatus for the application of a thread having a label attached to it to a strip of filter paper in a machine for the automatic production of filter bags for the products to be infused. 4,382,355, Cl. 53-134.000.
Romano-Moran, Roberto; and Brower, Ronald W., to NCR Corporation. Silicon nitride S/D ion implant mask in CMOS device fabrication. 4,382,827, Cl. 148-1.500.
Romanowicz, Stanislaw; Skoczynski, Wojciech; and Janik, Edward, to Centrum Konstrukcyino-Technologiczne Maszyn Gorniczych "KOMAG". Nine lining structure. 4,382,722, Cl. 405-291.000.
Ronort, Mark D.: *See*—
Lamberti, Vincent; and Ronort, Mark D., 4,382,871, Cl. 252-174.190.
Roos, Uwe V.: *See*—
Younkin, Harry A.; Mehnert, Gottfried; and Roos, Uwe V., 4,382,769, Cl. 425-525.000.
Rosenberg, Farel A. Intraoral dental appliance to correct retrusive mandibles orthopedically in the treatment of Class II malocclusions. 4,382,783, Cl. 433-19.000.
Rossi, Alessandro: *See*—
Bernardi, Luigi; Bosisio, Germano; Mantegani, Sergio; Rossi, Alessandro; and Temperilli, Aldemio, 4,382,940, Cl. 424-261.000.
Rosthauser, James W.: *See*—
Markusch, Peter H.; Potter, Terry A.; Yonek, Kenneth P.; and Rosthauser, James W., 4,383,070, Cl. 524-317.000.
Roussel Uclaf: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,382,942, Cl. 424-263.000.
Rowland, Incorporated: *See*—
Allard, Frederic P., 4,382,803, Cl. 51-298.000.
Roy, Richard N.; Labbe, Clerval; and Korman, Albert, to Mansonville Plastics Limited. Molding apparatus for expanding beads of polystyrene material. 4,382,757, Cl. 425-4.00R.
Rudolph, Udo; Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, to Bayer Aktiengesellschaft. Process for the production of aromatic carboxylic acid chlorides. 4,382,898, Cl. 260-544.00D.
Rudolph, Werner; and Fernschild, Guenter, to Kali Chemie AG. Process for the preparation of trifluoracetic acid derivatives. 4,382,897, Cl. 260-544.00Y.
Ruehle, William H., to Mobil Oil Corporation. Tuned air gun array. 4,382,486, Cl. 181-118.000.
Rutz, Richard F., to International Business Machines Corporation. Epitaxial crystal fabrication of SiC:AlN. 4,382,837, Cl. 156-610.000.
Ruyak, Robert F., to Autoclave Engineers, Inc. Magnetically actuated rising stem valve. 4,382,578, Cl. 251-65.000.
Ryan, Paul A., to Minnesota Mining and Manufacturing Co. Low profile electric field sensor. 4,383,260, Cl. 343-701.000.
Saad, William T.; and Stodgell, Robert F., to General Electric. Waterborne coating compositions. 4,383,062, Cl. 524-35.000.
Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. NMOS Crystal oscillator. 4,383,224, Cl. 331-74.000.
Sable Freres International: *See*—
Aondetto, Bernard, 4,382,573, Cl. 248-561.000.
Sadhukhan, Pasupati; and Billings, William G., to Phillips Petroleum Company. Quenching of ZnO-char gasification. 4,382,915, Cl. 423-415.00A.
Sadler, Frederick J., to Schreiber Foods, Inc.; and Butland Industries, Ltd. Method for treating cheese. 4,382,969, Cl. 426-272.000.
St. Regis Paper Company: *See*—
Wilharm, Fred B., 4,382,538, Cl. 229-62.500.
Saito, Takeo: *See*—
Kitai, Kiyoshi; and Saito, Takeo, 4,382,694, Cl. 368-187.000.
Saito, Toru: *See*—
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, 4,382,413, Cl. 105-163.00R.
Saito, Yasuo: *See*—
Nagashima, Akira; and Saito, Yasuo, 4,382,333, Cl. 30-381.000.
Saito, Yukio: *See*—
Fukino, Kunihiro; Saito, Yukio; and Shiokama, Yoshiharu, 4,382,671, Cl. 354-286.000.
Saitoh, Sumio: *See*—
Yamamoto, Tamechika; Saitoh, Sumio; Yoshimura, Hikoji; and Yoshimura, Masaru, 4,383,057, Cl. 523-333.000.
Sakai, Ichio; and Otani, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for cooling a frictional clutch for an automobile. 4,382,497, Cl. 192-113.00A.
Sakai, Kazuo; Matsushima, Yuichi; Akiba, Shigeyuki; and Yamamoto, Takaya, to Kokusai Denshin Denwa Kabushiki Kaisha. Avalanche photo diode. 4,383,266, Cl. 357-13.000.
Sakai, Yasuo: *See*—
Ishii, Yukihisa; Sakai, Yasuo; Goto, Takao; and Masuda, Kiyoshi, 4,382,953, Cl. 424-285.000.
Sakasai, Toshio: *See*—
Noda, Fumio; Hagiwara, Akio; Hayashi, Kazuya; Iwaasa, Takashi; Mizunuma, Takeji; and Sakasai, Toshio, 4,382,964, Cl. 426-7.000.
Sakito, Yoji: *See*—
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,383,122, Cl. 568-436.000.
Salk Institute for Biological Studies, The: *See*—
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,382,922, Cl. 424-177.000.
Salomon, Georges P. J., to Ets. Francois Salomon et Fils, S.A. Ski binding and boot. 4,382,611, Cl. 280-615.000.
Salzburg, Herbert: *See*—
Meyborg, Holger; Wagner, Kuno; Barnes, James M.; and Salzburg, Herbert, 4,383,051, Cl. 521-176.000.
Sampayo, Eduardo A. Gas turbine engine. 4,382,359, Cl. 60-39.511.
Sanada, Noriyoshi: *See*—
Aikawa, Chuta; Sanada, Noriyoshi; Murakami, Mitsuyoshi; Kikuchi, Junzo; and Kuroda, Masaki, 4,383,137, Cl. 179-18.0ES.
Sander, Wendell B., to Apple Computer, Inc. Computer with a memory system for remapping a memory having two memory output buses for high resolution display with scrolling of the displayed characters. 4,383,296, Cl. 364-200.000.
Sandhu, M. Akram: *See*—
Martin, Thomas W.; and Sandhu, M. Akram, 4,383,018, Cl. 430-14.000.
Sandine, William E.; and Ayres, James W., to State of Oregon, acting by and for the State Board of Higher Education on behalf of Oregon State University. Method and starter compositions for the growth of acid producing bacteria and bacterial composition produced thereby. 4,382,965, Cl. 426-7.000.
Sandoz Ltd.: *See*—
Grassberger, Maximilian; and Petranyi, Gabor, 4,382,951, Cl. 424-275.000.
Sandstrom, Paul H.: *See*—
Castner, Kenneth F.; and Sandstrom, Paul H., 4,383,097, Cl. 526-133.000.
Sangamo Weston: *See*—
Munt, Irwin, 4,383,246, Cl. 340-347.0NT.
Sanjo Seiki Co., Ltd.: *See*—
Hori, Nobuo, 4,382,684, Cl. 366-178.000.
Sanvido, Sergio, to Bristol S.A. Security device for removably locking two mobile elements together. 4,382,372, Cl. 70-355.000.
Sanyo Electric Co., Ltd.: *See*—
Nakata, Takeshi; Takase, Hitoshi; and Horinouchi, Atsushi, 4,383,157, Cl. 219-10.55B.
Sargent Industries, Inc.: *See*—
Smith, Fred T., 4,382,740, Cl. 414-293.000.
Sartorius GmbH: *See*—
Knothe, Erich; Berg, Christoph; and Melcher, Franz-Josef, 4,382,480, Cl. 177-212.000.
Sasaki, Akio; and Echigo, Yoshiaki, to Unitika Ltd. Phenolic chelate resin, process for producing the same, and method of recovering heavy metal ions with the same. 4,383,104, Cl. 528-148.000.
Sasaki, Hiromu; Nakamura, Nobuo; and Nagano, Humikazu, to Sharp Kabushiki Kaisha. Read-out level compensation in an optical reader system. 4,383,275, Cl. 358-280.000.
Sasaki, Isamu: *See*—
Torii, Michihiro; Kihara, Utsuo; Goto, Hirohito; and Sasaki, Isamu, 4,382,839, Cl. 156-616.00R.
Sassover, Nathan; and Rennie, William A., to TMX Systems Limited. Automobile anti-theft system. 4,383,242, Cl. 340-64.000.
Sato, Fumihiko: *See*—
Takeo, Kimihiko; Hirano, Tooichiro; and Sato, Fumihiko, 4,383,111, Cl. 536-102.000.
Sato, Katsuhiko: *See*—
Nishihara, Koji; Hashimoto, Takeshi; Tanaka, Shunsaku; and Sato, Katsuhiko, 4,382,896, Cl. 260-505.00C.
Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, 4,382,691, Cl. 368-157.000.
Sato, Yo; Abe, Norio; Kikuchi, Suguru; Goto, Fumio; and Sugimoto, Akira, to Kabushiki Kaisha Sato. Composite label arranging device. 4,382,835, Cl. 156-384.000.
Satoh, Tetsuo: *See*—
Kinoshita, Tatsuo; Oguchi, Yutaka; Maruhashi, Kenji; Kojima, Ichiro; Endoh, Noboru; and Satoh, Tetsuo, 4,383,110, Cl. 536-28.000.
Satomoto, Atsushi. Bimetal-actuated temperature responsive valve assembly. 4,382,545, Cl. 236-48.00R.
Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Temperature responsive valve device. 4,382,546, Cl. 236-48.00R.

Sattelmeyer, Richard: *See*—
Weil, Joachim; and Sattelmeyer, Richard, 4,383,005, Cl. 428-625.000.

Satzler, Ronald L., to Caterpillar Tractor Co. Rotating cutter and stitcher for severing material from a body. 4,382,834, Cl. 156-382.000.

Saunders Archery Co.: *See*—
Saunders, Charles A., 4,382,339, Cl. 33-265.000.

Saunders, Charles A., to Saunders Archery Co. Bow square. 4,382,339, Cl. 33-265.000.

Sbuelz, Anes, to Italtel Societa Italiana Telecommunicazioni S.p.A. Tone generator for PAM/TDM telecommunication system. 4,383,313, Cl. 370-51.000.

Schadlich, Fritz; Armbruster, Gerhard; and Jaspert, Klaus-Dieter, to Robert Bosch GmbH. Planing tool. 4,382,458, Cl. 144-230.000.

Schadt, Frank L., III, to Du Pont de Nemours, E. I., and Company. Dye mordanting development. 4,383,023, Cl. 430-264.000.

Scheiber, Wilfried: *See*—
Vonach, Walter, 4,382,720, Cl. 405-269.000.

Scheinpflug, Hans: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, 4,382,944, Cl. 424-269.000.

Schelhorn, Robert L., to RCA Corporation. Structure for mounting a semiconductor chip to a metal core substrate. 4,383,270, Cl. 357-71.000.

Schempp, Heinrich: *See*—
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,382,893, Cl. 260-465.00D.

Schenker, Allan. Stand-off shield for uncovered refrigerated units. 4,382,461, Cl. 160-329.000.

Schepp, Frank, to R & G Mold Company Inc. Thermoforming apparatus and method. 4,382,762, Cl. 425-142.000.

Scherberg, Neal H., to University Patents, Inc. Radioiodine labeling during protein synthesis. 4,383,033, Cl. 435-68.000.

Schering Corporation: *See*—
Afonso, Adriano, 4,382,949, Cl. 424-274.000.

Schertz, Robert O. Airplane spreader apparatus. 4,382,568, Cl. 244-136.000.

Schick, Henry, to Gilbert Manufacturing Co., Inc. Resilient contact support for lamp socket. 4,382,654, Cl. 339-176.00L.

Schieber, Franz; and Mayer, Dieter, to C. Conradty Nurnberg GmbH & Co KG. Carbon electrode, in particular a graphite electrode for producing steel. 4,383,321, Cl. 373-88.000.

Schirmer, Henry G.; and Gillio-Tos, Mario, to W. R. Grace & Co., Cryovac Div. Packages having readily peelable seals. 4,382,513, Cl. 206-484.000.

Schlecht, Karl. Twin-cylinder pump, in particular for pumping thick liquids. 4,382,752, Cl. 417-516.000.

Schlenk, Manfred; and Schmidtner, Erich, to Siemens Aktiengesellschaft. Control arrangement for a uniform load distribution of at least two power supply devices connected in parallel at the output side. 4,383,183, Cl. 307-43.000.

Schlotterbeck, David L.: *See*—
Van Wormer, William D., Jr.; Gniewek, Stephen A.; and Schlotterbeck, David L., 4,382,808, Cl. 55-418.000.

Schmelzer Corporation: *See*—
Johnson, LeRoy B., 4,382,899, Cl. 261-39.00B.

Schmeykal, Rudolf: *See*—
Weigel, Peter; and Schmeykal, Rudolf, 4,382,594, Cl. 271-272.000.

Schmid, Eckhardt: *See*—
Binder, Helmut; Haar, Gerhard; Schmid, Eckhardt; and Wirth, Hans-Joachim, 4,383,290, Cl. 362-290.000.

Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Contour copying machine. 4,382,727, Cl. 409-105.000.

Schmidt, Gerhard: *See*—
Fester, Walter; Huber, Bernd; and Schmidt, Gerhard, 4,383,086, Cl. 525-238.000.

Schmidt, Hans U.: *See*—
Nissen, Dietmar; Schmidt, Hans U.; Straehle, Wolfgang; Schuett, Uwe; and Marx, Matthias, 4,383,050, Cl. 521-174.000.

Schmidt, Manfred: *See*—
Rudolph, Udo; Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, 4,382,898, Cl. 260-544.00D.

Schmidt, Walter: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,382,805, Cl. 55-2.000.

Schmidtner, Erich: *See*—
Schlenk, Manfred; and Schmidtner, Erich, 4,383,183, Cl. 307-43.000.

Schmit, Frank L.; Redmon, David T.; and Ewing, Lloyd, to Water Pollution Control Corporation. In place gas cleaning of diffusion elements. 4,382,867, Cl. 210-754.000.

Schneider, Diedrich: *See*—
Johannes, Gerhard; Durr, Helmut; Plath, Dieter; Schneider, Diedrich; and Esser, Klaus, 4,383,055, Cl. 523-221.000.

Schneider, Karl E.: *See*—
Porter, William F.; Schwab, Shirley J.; and Schneider, Karl E., 4,382,809, Cl. 65-4.400.

Schnetger, Jochen: *See*—
Thiel, Klaus; Stecher, Roland; and Schnetger, Jochen, 4,383,072, Cl. 524-432.000.

Schoenberg, Allan R., to Du Pont de Nemours, E. I., and Company. Low coating weight silver halide element using mix sensitization techniques. 4,383,030, Cl. 430-599.000.

Scholl, Hans-Joachim: *See*—
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,382,933, Cl. 424-248.400.

Schreck, Carl E.: *See*—
McGovern, Terrence P.; and Schreck, Carl E., 4,382,950, Cl. 424-274.000.

Schreiber Foods, Inc.: *See*—
Sadler, Frederick J., 4,382,969, Cl. 426-272.000.

Schroder, Stephen J.: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,383,003, Cl. 428-611.000.

Schubert & Salzer, Maschinenfabrik Aktiengesellschaft: *See*—
Goldammer, Georg; and Mahrt, Gunter, 4,382,315, Cl. 19-81.000.
Goldammer, Georg; Mahrt, Gunter; and Dammig, Joachim, 4,382,316, Cl. 19-81.000.

Schuett, Uwe: *See*—
Nissen, Dietmar; Schmidt, Hans U.; Straehle, Wolfgang; Schuett, Uwe; and Marx, Matthias, 4,383,050, Cl. 521-174.000.

Schulze, Heinz; and Waddill, Harold G., to Texaco Inc. Hydrophilic high polymers prepared from aqueous solutions or dispersions of polyoxypropylene polyamine N-N'-polymethylene sulfonates. 4,383,054, Cl. 523-131.000.

Schummer, Helmut: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,382,805, Cl. 55-2.000.

Schwab, Shirley J.: *See*—
Porter, William F.; Schwab, Shirley J.; and Schneider, Karl E., 4,382,809, Cl. 65-4.400.

Schwantje, Hans H.: *See*—
Henslee, Walter W.; Morrow, Stanley J.; Lindsey, John S.; Christenson, Christopher P.; and Schwantje, Hans H., 4,382,997, Cl. 428-446.000.

Schwender, Charles F.: *See*—
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,382,939, Cl. 424-256.000.

SCM Corporation: *See*—
Abel, Peter T., 4,383,075, Cl. 524-512.000.

Scott, Brian L.; and Hardesty, Lee H., to Scott Instruments Corporation. Method and apparatus for speech recognition. 4,383,135, Cl. 179-1.0SD.

Scott Instruments Corporation: *See*—
Scott, Brian L.; and Hardesty, Lee H., 4,383,135, Cl. 179-1.0SD.

Scott, James J. Methods of reinforcing and stabilizing an earth structure, and a stabilizer set therefor. 4,382,719, Cl. 405-259.000.

Sealright Co., Inc.: *See*—
Eddy, William R.; Oliver, Ronald R.; and Young, Jerry W., 4,382,422, Cl. 118-669.000.

Searcy, Jimmie Q.: *See*—
Armijo, James R.; and Searcy, Jimmie Q., 4,383,014, Cl. 429-112.000.

Sears, Roebuck and Co.: *See*—
Gall, John C., 4,383,291, Cl. 362-352.000.

SECO Industries, Inc.: *See*—
Moss, Anna M., 4,382,310, Cl. 15-229.0BP.

Seidel, Hans: *See*—
Stahl, Peter; Vomel, Wolfgang; and Seidel, Hans, 4,383,032, Cl. 435-23.000.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Apparatus for and method of collating partitioned time disordered synchronous data streams. 4,383,316, Cl. 370-118.000.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; and Saito, Takeo, 4,382,694, Cl. 368-187.000.

Seiko Seiki Kabushiki Kaisha: *See*—
Andoh, Shigenori; and Kogure, Toshiharu, 4,382,638, Cl. 308-187.000.

Seikosha Co., Ltd.: *See*—
Fujita, Masanori, 4,382,697, Cl. 368-240.000.

Seito, Shinichi: *See*—
Ozawa, Masakazu; Watanabe, Kunio; Kojima, Kiyohide; Seito, Shinichi; and Miyazaki, Takashi, 4,383,263, Cl. 346-140.00R.

Seki, Masahiko, to Nippon Steel Corporation. Air blast slag cut off device for steel converter. 4,382,582, Cl. 266-45.000.

Sekine, Masaoki; and Shimazu, Seiki, to TDK Electronics Co., Ltd. Tape cover of magnetic tape cassette and process for preparing tape cover. 4,382,523, Cl. 220-337.000.

Sekine, Masaoki: *See*—
Shimazu, Seiki; and Sekine, Masaoki, 4,382,522, Cl. 220-337.000.

Sekine, Yuzuru: *See*—
Fujiwara, Akiko; Hoshino, Tatsuo; and Sekine, Yuzuru, 4,383,037, Cl. 435-78.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,382,996, Cl. 428-442.000.

Selleri, Narciso: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,382,338, Cl. 33-178.00E.

Sendair International Limited: *See*—
Tennick, Maurice, 4,382,450, Cl. 137-242.000.

Senoo, Tetsuo, to Nissan Motor Company, Ltd. Level regulator for an automotive vehicle. 4,382,603, Cl. 280-6.00R.

Senuma, Michio: *See*—
Hashimoto, Teiji; Senuma, Michio; and Shimada, Fumio, 4,382,670, Cl. 354-246.000.

Setra Systems, Inc.: *See*—
Lee, Shih-Ying; and Briefer, Dennis K., 4,382,479, Cl. 177-189.000.

Shafer, Frances E.; and Shafer, Lynn O. Maternity sit-ease panties. 4,382,443, Cl. 604-396.000.

Shafer, Lynn O.: *See*—
Shafer, Frances E.; and Shafer, Lynn O., 4,382,443, Cl. 604-396.000.

Shaffer, Robert W.; and Acker, Jan R., to Ingersoll-Rand Company. Scroll-type, positive fluid displacement apparatus with diverse clearances between scroll elements. 4,382,754, Cl. 418-55.000.

Shamai, Yair: *See*—
Eisen, Yossi; Shamai, Yair; Ovadia, Even; and Faermann, Sergio, 4,383,179, Cl. 250-472.100.

Sharp Kabushiki Kaisha: *See*—
Furusawa, Takashi, 4,383,156, Cl. 219-10.55B.
Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, 4,383,306, Cl. 364-900.000.
Sasaki, Hiromu; Nakamura, Nobuo; and Nagano, Humikazu, 4,383,275, Cl. 358-280.000.

Shasha, Baruch S., to United States of America, Agriculture. Encapsulation by entrapment within starch adduct matrix. 4,382,813, Cl 71-88.000.

Sheldahl, Inc.: *See*—
Roberts, Sidney J.; and Dowdle, Deanna M., 4,383,020, Cl. 430-127.000.

Shell Oil Company: *See*—
Diaz, Zaida, 4,382,918, Cl. 423-573.00R.

Shen, C. Anthony. Thumb spica. 4,382,439, Cl. 128-77.000.

Shen, Jian-Kuo: *See*—
Miller, Robert C.; Bradley, John J.; Darden, Boyd E.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,383,295, Cl. 364-200.000.

Sherman, Esmeralda R., to Stauffer Chemical Company. Phosmet-diflubenzuron insecticidal composition. 4,382,927, Cl. 424-200.000.

Shiba, Haruo, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,382,565, Cl. 242-199.000.

Shibata, Atsushi; and Koike, Takeshi, to Hitachi, Ltd. System for driving rotary member in vacuum. 4,383,178, Cl. 250-441.100.

Shibata, Seiichi. Novel glycopeptide and methods of isolating and using the same. 4,382,887, Cl. 260-112.50R.

Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,382,691, Cl. 368-157.000.

Shida, Mitsuzo; Pullukat, Thomas J.; and Hoff, Raymond E., to Chempiex Company. Method of polymerizing 1-olefins. 4,383,096, Cl. 526-129.000.

Shields, Steven E.; and Fletcher, Bruce G., to Hughes Aircraft Company. Use of polysilicon for smoothing of liquid crystal MOS displays. 4,382,658, Cl. 350-334.000.

Shiell, Thomas J. Collinear four-point probe head and mount for resistivity measurements. 4,383,217, Cl. 324-158.00F.

Shih, Stuart S.: *See*—
Angevine, Philip J.; and Shih, Stuart S., 4,382,851, Cl. 208-49.000.

Shimada, Fumio: *See*—
Hashimoto, Teiji; Senuma, Michio; and Shimada, Fumio, 4,382,670, Cl. 354-246.000.

Shimazu, Seiki; and Sekine, Masaoki, to TDK Electronics Co., Ltd. Tape cover of magnetic tape cassette and process for preparing tape cover. 4,382,522, Cl. 220-337.000.

Shimazu, Seiki: *See*—
Sekine, Masaoki; and Shimazu, Seiki, 4,382,523, Cl. 220-337.000.

Shimizu, Hirokazu; Wada, Masaru; Sugino, Takashi; and Itoh, Kunio, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser. 4,383,319, Cl. 372-45.000.

Shimizu, Kazuo: *See*—
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,382,706, Cl. 401-67.000.

Shimogawa, Toshiaki: *See*—
Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, 4,382,563, Cl. 242-107.000.

Shindo, Yoshio; Tamura, Teppei; Kabeya, Motoo; Nagahisa, Mitsumasa; and Asano, Hidejirou, to Nippon Steel Corporation. Hot-dip galvanized steel sheet with zero-spangle having excellent age-flaking resistance, and hot-dip galvanizing process and composition of molten zinc bath therefor. 4,383,006, Cl. 428-659.000.

Shinzo, Ikeuchi: *See*—
Hirofumi, Shimizu; Akira, Yamano; and Shinzo, Ikeuchi, 4,383,017, Cl. 430-7.000.

Shiokama, Yoshiharu: *See*—
Fukino, Kunihiro; Saito, Yukio; and Shiokama, Yoshiharu, 4,382,671, Cl. 354-286.000.

Shiraishi, Masao, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Thermosiphon. 4,382,466, Cl. 165-104.110.

Shiraki, Shigemi; and Nakano, Saiji, to Mitsui Petrochemical Industries Ltd. Tubular polymerization reactor, and process for polymerization. 4,383,093, Cl. 526-64.000.

Shirane, Hideo: *See*—
Kutsusawa, Tadashi; Shirane, Hideo; Fujihara, Mikiharu; and Hisada, Hideho, 4,383,041, Cl. 435-291.000.

Shirota, Kohei: *See*—
Yonezawa, Akira; and Shirota, Kohei, 4,383,176, Cl. 250-396.0ML.

Shono, Tetsuji: *See*—
Tano, Eiichi; and Shono, Tetsuji, 4,382,669, Cl. 354-268.000.

Shurygin, Sergei Y.: *See*—
Khutoretsky, Garri M.; Ignatiev, Anatoly D.; Gurevich, Elrikh I.; Shurygin, Sergei Y.; Belova, Tamara N.; Azarov, Evgeny M., deceased; and Azarova, Ekaterina A., administrator, 4,383,190, Cl. 310-55.000.

Sicardi, Susana M. Bishydrazide quaternary salts and pharmaceutical compositions thereof. 4,382,941, Cl. 424-263.000.

Siecor Corporation: *See*—
Davis, Lawrence E.; and Patel, Naren I., 4,382,821, Cl. 106-272.000.

Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; and Stoeger, Klaus, 4,382,844, Cl. 204-14.00N.
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,382,805, Cl. 55-2.000.
Kleinschmidt, Peter; and Magori, Valentin, 4,382,377, Cl. 73-35.000.
Krugel, Karl-Heinz; Tappeiner, Hermann; Paessler, Ernst-Robert; and Smutny, Kurt, 4,383,243, Cl. 340-310.00R.
Pfleiderer, Hans-Jorg; and Widmann, Dietrich, 4,382,826, Cl. 148-1.500.
Schlenk, Manfred; and Schmidtner, Erich, 4,383,183, Cl. 307-43.000.

Sieradzki, Benjamin: *See*—
Hawley, Charles C.; and Sieradzki, Benjamin, 4,382,404, Cl. 99-472.000.

Sikorra, Daniel J., to Honeywell Inc. Electromechanical actuator. 4,383,192, Cl. 310-154.000.

Silberman, Ira J., to Diversified Products Corporation. Weight lifting type exercising device. 4,382,596, Cl. 272-118.000.

Simm, Walter, to Agfa-Gevaert Aktiengesellschaft. Process for electrophotographic color image development on a continuously moving image carrier. 4,383,019, Cl. 430-45.000.

Simmler, Paul, to Luwa AG. Air distribution apparatus, especially for oversaturated air. 4,382,401, Cl. 98-40.00C.

Simone, John F.: *See*—
Slocki, Allen T.; Carr, Brian J.; and Simone, John F., 4,383,090, Cl. 525-502.000.

Simulation Sciences, Inc.: *See*—
Black, Cline, 4,382,843, Cl. 203-19.000.

Sinclair, William Y., to Aries Electronics, Inc. Stackable flat conductor cable connector assembly. 4,382,652, Cl. 339-103.00M.

Singer Company, The: *See*—
Yatsushiro, Kenji; and Godkin, Mikhail, 4,383,234, Cl. 335-253.000.

Sinha, Mahadeva P.; Giffin, Charles E.; Norris, David D.; and Friedlander, Sheldon K., to United States of America, National Aeronautics and Space Administration. Particle analyzing method and apparatus. 4,383,171, Cl. 250-282.000.

Sjoerdsma, Albert, to Merrell Dow Pharmaceuticals Inc. Method of alleviating withdrawal symptoms. 4,382,946, Cl. 424-273.00R.

Sjoholm, Bertil H., to Gotaverken Anteknik AB. Method of manufacturing a heat exchange tube with internal surface enlarging elements. 4,383,163, Cl. 219-107.000.

Sjonvall, Ragnar E.: *See*—
Klose, Robert E.; and Sjonvall, Ragnar E., 4,382,963, Cl. 426-3.000.

Skoczynski, Wojciech: *See*—
Romanowicz, Stanislaw; Skoczynski, Wojciech; and Janik, Edward, 4,382,722, Cl. 405-291.000.

Slocki, Allen T.; Carr, Brian J.; and Simone, John F., to Diamond Shamrock Corporation. Polyepoxide curing by polymercaptans and a reaction product of amino acids or lactams with amines. 4,383,090, Cl. 525-502.000.

Slowbe, Joseph A. Joint assemblies between structural members. 4,382,710, Cl. 403-252.000.

Smart, Frederick R., to Huyck Corporation. Papermaker's grooved back felt. 4,382,987, Cl. 428-212.000.

Smith, Dennis C.; and Maijer, Rolf, to Dennis Smith Consulting Limited; and Romada Holdings Ltd. Bonding to calcified tissues. 4,382,792, Cl. 433-217.000.

Smith, Fred T., to Sargent Industries, Inc. Refuse compaction apparatus and method. 4,382,740, Cl. 414-293.000.

Smith, Gregory J., to Motorola, Inc. Latchable fast settling digital to analog converter bit switch. 4,383,248, Cl. 340-347.0DA.

Smith International, Inc.: *See*—
Morrill, Charles D., 4,382,717, Cl. 405-169.000.

Smith, Peter K.: *See*—
Hajimichael, Agathangelos; Hopper, Sidney; and Smith, Peter K., 4,383,099, Cl. 528-60.000.

Smith, Roger D.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,382,760, Cl. 425-139.000.

Smith, Ronald J.; and Dishaw, John P., to Intel Corporation. Method for aligning laser beam with fuses in integrated circuit. 4,383,165, Cl. 219-121.0LN.

Smutny, Kurt: *See*—
Krugel, Karl-Heinz; Tappeiner, Hermann; Paessler, Ernst-Robert; and Smutny, Kurt, 4,383,243, Cl. 340-310.00R.

Sobole, Pierre, to Societe Bourguignonne de Mecanique. Safety ignition device notably for burner valve. 4,382,773, Cl. 431-264.000.

Societa' Cavi Pirelli S.p.A.: *See*—
Lanfranconi, Attilio, 4,383,133, Cl. 174-127.000.

Societe Anonyme Automobiles Citroen: *See*—
Froumajou, Armand, 4,382,629, Cl. 297-322.000.

Societe Bourguignonne de Mecanique: *See*—
Sobole, Pierre, 4,382,773, Cl. 431-264.000.

Societe Roquette Freres: *See*—
Devos, Francis; Bussiere, Guy; and Huchette, Michel, 4,382,962, Cl. 426-3.000.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Tu Xuan, Mai, 4,382,693, Cl. 368-160.000.
Soeimah, Edy, to Mobil Oil Corporation. Determining stresses and length changes in well production tubing. 4,382,381, Cl. 73-151.000.
Software Concepts, Inc.: *See—*
Gibson, Stuart M., III, 4,383,307, Cl. 364-900.000.
Solid State Devices: *See—*
Staats, Charles W., Jr., 4,383,240, Cl. 340-46.000.
Solomon, Frank, to Diamond Shamrock Corporation. Extraction treatment. 4,382,875, Cl. 252-425.300.
Solomon, Frank: *See—*
Gestaut, Lawrence J.; and Solomon, Frank, 4,382,904, Cl. 264-49.000.
Sommers, Michael W., to Cosmos Research Associates. Physiological fluid shunt system and improvements therefor. 4,382,445, Cl. 604-8.000.
Soneda, Mitsuo: *See—*
Tsuchiya, Takao; Soneda, Mitsuo; and Nakamura, Isa, 4,383,326, Cl. 377-61.000.
Sony Corporation: *See—*
Guisinger, Barrett E., 4,383,205, Cl. 318-254.000.
Tsuchiya, Takao; Soneda, Mitsuo; and Nakamura, Isa, 4,383,326, Cl. 377-61.000.
Sorensen, Jens O.: *See—*
Kira, Gene S.; and Sorensen, Jens O., 4,382,365, Cl. 60-675.000.
Sorensen, Jens Ole: *See—*
Kira, Gene S.; and Sorensen, Jens O., 4,382,365, Cl. 60-675.000.
Sorensen, Torben, to Getfresh Food Limited. Food processing. 4,382,970, Cl. 426-275.000.
Sorenson, Richard W., to Carlingswitch, Inc. Positive action rocker switch. 4,383,154, Cl. 200-291.000.
Sorenson, Roderick J.: *See—*
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,382,939, Cl. 424-256.000.
Sorrells, Frank D., to Cole National Corporation. Chuck assembly for lens block. 4,382,351, Cl. 51-217.00L.
Sosnowski, Zenon M. Method for extracting propolis and water soluble dry propolis powder. 4,382,886, Cl. 260-107.000.
Soula, Gerard: *See—*
Locatelli, Jean-Louis; and Soula, Gerard, 4,383,118, Cl. 549-517.000.
Spademan, Richard G. Dynamic internal fitting system for a sport shoe. 4,382,342, Cl. 36-119.000.
Spaepen, Gustaaf J. F., to Electrochemische Energieconversie, NV. Process for the production of a layer of an electrode for a cell, particularly for a fuel cell and electrode containing such a layer. 4,383,010, Cl. 429-42.000.
Spencer, Joseph C., to Deere & Company. Load-responsive steering control valve. 4,382,483, Cl. 180-153.000.
Spencer, Lloyd: *See—*
Christy, Mark H.; and Spencer, Lloyd, 4,382,549, Cl. 239-106.000.
Spengler, Heinz, to G. Rau GmbH & Co. Thermocouple bimetal having a high application limit, and method of producing the same. 4,383,004, Cl. 428-619.000.
Speranza, George P.: *See—*
McDaniel, Kenneth G.; and Speranza, George P., 4,383,102, Cl. 528-107.000.
Sperry Corporation: *See—*
Cooley, David J.; and Ebbinga, Theodore C., 4,383,245, Cl. 340-347.0DA.
Spicer, Lawrence E. Apparatus for electrolysis using gas and electrolyte channeling to reduce shunt currents. 4,382,849, Cl. 204-258.000.
Spongr, Jerry J.: *See—*
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.
Spooner, Colin R., to Delorean Research Limited Partnership. Attachment of a stainless steel outerbody to a glass reinforced plastic inner body. 4,382,626, Cl. 296-31.00P.
Square D Company: *See—*
Paley, Gary, 4,382,647, Cl. 339-7.000.
Staar S.A.: *See—*
Staar, Theophiel C. J. L., 4,383,285, Cl. 360-132.000.
Staar, Theophiel C. J. L., to Staar S.A. Memory error signal devices for tape cassettes with memory. 4,383,285, Cl. 360-132.000.
Staats, Charles W., Jr., to Solid State Devices. Recorder of the status of a traffic control system. 4,383,240, Cl. 340-46.000.
Stachura, Victor J.: *See—*
Garrison, Maurice R.; and Stachura, Victor J., 4,382,467, Cl. 165-159.000.
Staedtler, Rolf: *See—*
Buchs, Wolfgang; and Staedtler, Rolf, 4,382,712, Cl. 403-405.000.
Stahl, Peter; Vomel, Wolfgang; and Seidel, Hans, to Boehringer Mannheim GmbH. Reagent for the determination of β-lactamase. 4,383,032, Cl. 435-23.000.
Staler, Terry, to Atlantic Richfield Company. Electrical charging and discharging control apparatus and method, and solar to electrical energy conversion apparatus incorporating such apparatus. 4,383,211, Cl. 320-9.000.
Stamicarbon, B.V.: *See—*
de Graaf, Theodorus F. M.; and Delahaye, Hubertus J. A., 4,383,124, Cl. 568-485.000.
van Geem, Paul C.; and Teunissen, Antonius J. J. M., 4,383,127, Cl. 568-801.000.
Standard Oil Company (Indiana): *See—*
Paschke, Edward F.; Stasi, Michael A.; and Rader, Edward F., 4,383,084, Cl. 525-184.000.
Stanley, Charles A., to Litek International Inc. Circuit means for efficiently driving an electrodeless discharge lamp. 4,383,203, Cl. 315-248.000.
Stanton, William B.: *See—*
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.
Staplin, Theodore R., Jr.: *See—*
Miller, Robert C.; Bradley, John J.; Darden, Boyd E.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,383,295, Cl. 364-200.000.
Starr, John B., Jr.: *See—*
Ko, Allen W.; and Starr, John B., Jr., 4,383,092, Cl. 526-62.000.
Stasi, Michael A.: *See—*
Paschke, Edward F.; Stasi, Michael A.; and Rader, Edward F., 4,383,084, Cl. 525-184.000.
State of Oregon, acting by and for the State Board of Higher Education on behalf of Oregon State University: *See—*
Sandine, William E.; and Ayres, James W., 4,382,965, Cl. 426-7.000.
Stauffer Chemical Company: *See—*
Sherman, Esmeralda R., 4,382,927, Cl. 424-200.000.
Stecher, Roland: *See—*
Thiel, Klaus; Stecher, Roland; and Schnetger, Jochen, 4,383,072, Cl. 524-432.000.
Steffens, James J., to Rhone-Poulenc Agrochimie. Herbicidal derivatives of 5-phenoxy-2-nitrofuran-3-carboxylic acid. 4,382,814, Cl. 71-88.000.
Steiger, Ross G.: *See—*
Dube, Gerald W.; Strycharz, Paul B.; Steiger, Ross G.; and Johnston, Douglas N., 4,382,859, Cl. 210-96.100.
Steine, Hans-Theo: *See—*
Luscher, Paul; and Steine, Hans-Theo, 4,382,811, Cl. 65-374.110.
Stelrad Group Limited: *See—*
Boyes, Michael, 4,382,425, Cl. 122-367.00R.
Stenger, Antoine: *See—*
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,382,930, Cl. 424-248.540.
Stengle, Edward J., Jr.; and Minneman, Lester C., to Owens-Illinois, Inc. Heat-resistant molding composition and molded parts for handling hot glass articles. 4,382,998, Cl. 428-450.000.
Stetter, Jorg: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Stetter, Jorg; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Scheinpflug, Hans, 4,382,944, Cl. 424-269.000.
Stevens, Timothy S.; and Langhorst, Martin A., to Dow Chemical Company, The. High performance anion-exchange chromatographic packing composition. 4,383,047, Cl. 521-28.000.
Stewart, Eugene T.: *See—*
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,382,581, Cl. 254-134.3FT.
Stewart, John T., to J. T. Stewart Associates, Inc. Energy management system with programmable thermostat. 4,382,544, Cl. 236-46.00R.
Stichting Rega V.Z.W.: *See—*
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., 4,382,925, Cl. 424-180.000.
Stiff, Bernard. Rotary shaft control apparatus. 4,382,391, Cl. 74-640.000.
Stocking, George E., to General Electric Company. Air conditioning apparatus. 4,382,369, Cl. 62-280.000.
Stodgell, Robert F.: *See—*
Saad, William T.; and Stodgell, Robert F., 4,383,062, Cl. 524-35.000.
Stoeger, Klaus: *See—*
Birkle, Siegfried; and Stoeger, Klaus, 4,382,844, Cl. 204-14.00N.
Stoetzer, Steven R.; and Wiley, Robert E., to Acheson Industries, Inc. Method for shielding electronic equipment by coating with copper containing composition. 4,382,981, Cl. 427-105.000.
Stofer, Bernard, to Gesellschaft zur Forderund der Forschung an der Eidgenossischen Technischen Hochschule. Process and apparatus for the continuous removal of undesirable components of solid particles by a solvent applied in counterflow. 4,382,910, Cl. 422-62.000.
Stokely-Van Camp, Inc.: *See—*
McIntyre, Russell T.; and Redston, John P., 4,382,993, Cl. 428-395.000.
Stone, Orison W., to Pack Image Incorporated. Dispensing container and blanks therefor. 4,382,526, Cl. 221-34.000.
Straehle, Wolfgang: *See—*
Nissen, Dietmar; Schmidt, Hans U.; Straehle, Wolfgang; Schuett, Uwe; and Marx, Matthias, 4,383,050, Cl. 521-174.000.
Strauss, Jurgen: *See—*
Bergthaller, Peter; Helling, Guenter; and Strauss, Jurgen, 4,383,021, Cl. 430-213.000.
Stroman, David W.: *See—*
Argoudelis, Alexander D.; and Stroman, David W., 4,383,109, Cl. 536-16.500.
Strycharz, Paul B.: *See—*
Dube, Gerald W.; Strycharz, Paul B.; Steiger, Ross G.; and Johnston, Douglas N., 4,382,859, Cl. 210-96.100.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, to Ciba-Geigy Corporation. Sulfur-containing oxime compounds. 4,382,893, Cl. 260-465.00D.
Stutzman, Clarence. Combined ceiling mounted fan and lighting fixture. 4,382,400, Cl. 98-40.0DL.

Suefuji, Kazutaka; Arata, Tetsuya; Tomita, Yoshikatsu; Kotani, Sumihisa; Uchikawa, Naoshi; and Murayama, Akira, to Hitachi, Ltd. Refrigerating system using scroll type compressor. 4,382,370, Cl. 62-324.100.

Sugai Chemical Industry Co., Ltd.: *See*—
Nishihara, Koji; Hashimoto, Takeshi; Tanaka, Shunsaku; and Sato, Katsuhiko, 4,382,896, Cl. 260-505.00C.

Sugamiya, Ryoji; Nakamaru, Kazuto; Takegami, Keizo; Miwa, Koji; and Morita, Minoru, to Tsukishima Kaikai Co., Ltd. Process for purifying monochloroacetic acid. 4,383,121, Cl. 562-602.000.

Suggitt, Robert M.: *See*—
Cole, Edward L.; and Suggitt, Robert M., 4,382,895, Cl. 260-505.00P.

Sugimoto, Akira: *See*—
Sato, Yo; Abe, Norio; Kikuchi, Suguru; Goto, Fumio; and Sugimoto, Akira, 4,382,835, Cl. 156-384.000.

Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human follicle-stimulating hormone. 4,383,034, Cl. 435-70.000.

Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human luteinizing hormone. 4,383,035, Cl. 435-70.000.

Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human chorionic gonadotropin. 4,383,036, Cl. 435-70.000.

Sugino, Takashi: *See*—
Shimizu, Hirokazu; Wada, Masaru; Sugino, Takashi; and Itoh, Kunio, 4,383,319, Cl. 372-45.000.

Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; and Ishiyama, Kozo, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin composition. 4,383,066, Cl. 524-124.000.

Sugisawa, Ko: *See*—
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, 4,382,967, Cl. 426-96.000.

Sugita, Ariyasu: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,382,996, Cl. 428-442.000.

Sullivan, Donald P., to Universal Mobility, Inc. Dual drive traction system. 4,382,412, Cl. 104-124.000.

Sulzer Brothers Limited: *See*—
Hubner, Oskar, 4,382,455, Cl. 139-439.000.

Sumitomo Chemical Company, Limited: *See*—
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, 4,382,936, Cl. 424-256.000.
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,383,122, Cl. 568-436.000.
Yuyama, Masahiro; and Futagami, Mikio, 4,382,983, Cl. 427-386.000.

Sumitomo Electric Industries, Ltd.: *See*—
Yoshino, Masato, 4,382,636, Cl. 303-6.00C.

Sunde, Paul B., to Radcal Corporation. Method for removing gases caused by out-gassing in a vacuum vessel. 4,382,646, Cl. 445-41.000.

Sunds Defibrator Aktiebolag: *See*—
Hellberg, Enar V., 4,382,559, Cl. 241-79.300.

Surgikos, Inc.: *See*—
Wadsworth, Larry C.; and Davis, Wayne T., 4,382,378, Cl. 73-38.000.

Sutherland, Robert L.; and Holmes, George S., to Federal Paper Board Company, Inc. Wrap around carrier for returnable bottles. 4,382,505, Cl. 206-180.000.

Suzuki, Katsuhiko; and Tajima, Shinobu, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for operating during earthquake. 4,382,489, Cl. 187-29.00R.

Suzuki, Kiyoshi; and Kawashima, Hirokuni, to Canon Kabushiki Kaisha. Process for preparing cadmium sulfide for electrophotography and product thereof. 4,382,917, Cl. 423-561.00B.

Suzuki, Masaharu: *See*—
Horie, Kiyoshi; Morita, Yoshiaki; Mikamori, Yukio; Suzuki, Masaharu; and Yano, Susumu, 4,382,914, Cl. 423-300.000.

Suzuki, Mitsuo: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,383,206, Cl. 318-445.000.

Suzuki, Mitsuyuki: *See*—
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,383,231, Cl. 335-146.000.

Suzuki, Miyo: *See*—
Ohigashi, Hiroji; Nakanishi, Joshiharu; and Suzuki, Miyo, 4,383,194, Cl. 310-326.000.

Suzuki, Shin-ichi: *See*—
Higo, Moriaki; Kikuchi, Yasuo; Kitoh, Shinya; Suzuki, Shin-ichi; and Toda, Haruhiko, 4,383,052, Cl. 523-118.000.

Suzuki, Tomio. Hydraulic hammering apparatus. 4,382,475, Cl. 173-91.000.

Suzuki, Yasuyuki; and Ito, Tadashi, to Dainippon Inc. & Chemicals Inc. Anti-soiling treating agent. 4,382,798, Cl. 8-94.10R.

Svedman, Pal. Device for treating tissues, for example skin. 4,382,441, Cl. 604-291.000.

Svensson, Sven O., to F. L. Smidth & Co. Roller mill. 4,382,558, Cl. 241-30.000.

Svirklys, Ferdinand M. Steel pallet construction. 4,382,414, Cl. 108-56.100.

Sweeny, Keith H., to Envirogenics Systems Company. Treatment of reducible halohydrocarbon containing aqueous stream. 4,382,865, Cl. 210-743.000.

Swenson, Oscar J. Manual torque magnifying impact tool. 4,382,476, Cl. 173-93.500.

Swift, Harold E.: *See*—
Madgavkar, Ajay M.; and Swift, Harold E., 4,382,912, Cl. 423-224.000.

Synowiec, Stanislaw; and Hlinsky, Emil J., to MacLean-Fogg Company. Cargo securement device. 4,382,734, Cl. 410-70.000.

Synowiec, Stanislaw, to MacLean-Fogg Company. Cargo securement device. 4,382,735, Cl. 410-70.000.

Synthelabo: *See*—
Kaplan, Jean-Pierre; and George, Pascal, 4,382,938, Cl. 424-256.000.

Synthes AG: *See*—
Jacobs, Rae R., 4,382,438, Cl. 128-69.000.

Szonntagh, Eugene L., to Honeywell Inc. Combustible gas analyzer. 4,382,698, Cl. 374-37.000.

Tabata, Yukio: *See*—
Ohnuma, Teruyuki; Miyakawa, Seiichi; Mochizuki, Nobuo; Oyama, Hajime; and Tabata, Yukio, 4,382,420, Cl. 118-651.000.

Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,382,812, Cl. 71-86.000.

Taga, Kazumitsu: *See*—
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; Kimura, Takashi; and Taga, Kazumitsu, 4,382,967, Cl. 426-96.000.

Taira, Kazuo: *See*—
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,382,525, Cl. 220-456.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Tamai, Masaharu; Adachi, Takashi; Morimoto, Shigeo; Oguma, Ikyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,382,889, Cl. 260-112.50R.

Tajima, Humio: *See*—
Tomite, Tosio; Tajima, Humio; and Takamastu, Syuichi, 4,383,193, Cl. 310-154.000.

Tajima, Shinobu: *See*—
Suzuki, Katsuhiko; and Tajima, Shinobu, 4,382,489, Cl. 187-29.00R.

Takagi, Nobuyuki; Kobayashi, Hiroshi; and Yoshida, Okio, to Tokyo Shibaura Denki Kabushiki Kaisha. Image input device. 4,383,170, Cl. 250-216.000.

Takagi, Toshio: *See*—
Funabashi, Kiyomi; Kamiya, Kunio; Kikuchi, Makoto; Takagi, Toshio; Hashimoto, Morimasa; and Ichimura, Mitsuyoshi, 4,382,879, Cl. 252-457.000.

Takahashi, Susumu: *See*—
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,382,525, Cl. 220-456.000.

Takamastu, Syuichi: *See*—
Tomite, Tosio; Tajima, Humio; and Takamastu, Syuichi, 4,383,193, Cl. 310-154.000.

Takano, Toshimasa: *See*—
Nakajima, Shunichi; Takano, Toshimasa; and Hashimoto, Shinichi, 4,382,673, Cl. 355-3.0TR.

Takaoka, Nobuo; and Ageta, Kosei, to Delalande S.A. Tube insertion machine. 4,382,329, Cl. 29-726.000.

Takara Co., Ltd.: *See*—
Murakami, Kazuya, 4,382,347, Cl. 46-219.000.

Takasaki, Kazuhiro: *See*—
Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, 4,382,999, Cl. 428-494.000.

Takase, Hitoshi: *See*—
Nakata, Takeshi; Takase, Hitoshi; and Horinouchi, Atsushi, 4,383,157, Cl. 219-10.55B.

Takashima, Toshiyuki: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,382,996, Cl. 428-442.000.

Takeda Chemical Industries, Ltd.: *See*—
Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kawai, Kiyohisa, 4,382,923, Cl. 424-177.000.

Takegami, Keizo: *See*—
Sugamiya, Ryoji; Nakamaru, Kazuto; Takegami, Keizo; Miwa, Koji; and Morita, Minoru, 4,383,121, Cl. 562-602.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha Ltd. Herbicidal compositions. 4,382,812, Cl. 71-86.000.

Takenaga, Mutsuo: *See*—
Yamada, Noboru; Takenaga, Mutsuo; and Nishiuchi, Kenichi, 4,383,029, Cl. 430-541.000.

Takeo, Kimihiko; Hirano, Tooichiro; and Sato, Fumihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Processed starch, process for preparing same and use of same in medicines. 4,383,111, Cl. 536-102.000.

Takimoto, Yoshimi, to Yoshimi Mfg., Co., Ltd. Buckles. 4,382,318, Cl. 24-188.000.

Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Derivative of 4-(N-(3,4-dihydroxybenzylidene) aminomethyl cyclohexane-1-carboxylic acid. 4,382,955, Cl. 424-309.000.

Talve, Harri. Glider sail assembly. 4,382,417, Cl. 114-102.000.

Tam, Richard K. W., to Burroughs Corporation. Circular access linkage loop configuration for system communication. 4,383,314, Cl. 370-86.000.

Tamai, Masahuru; Adachi, Takashi; Morimoto, Shigeo; Oguma, Ikyoshi; Hanada, Kazunori; and Omura, Sadafumi, to Taisho Pharmaceutical Co., Ltd. Epoxysuccinic acid derivatives. 4,382,889, Cl. 260-112.50R.

Tamura Electric Works, Ltd.: *See*—
Aikawa, Chuta; Sanada, Noriyoshi; Murakami, Mitsuyoshi; Kikuchi, Junzo; and Kuroda, Masaki, 4,383,137, Cl. 179-18.0ES.

Tamura, Hideyuki: *See*—
Enoshima, Toshio; Furuhashi, Shoji; and Tamura, Hideyuki, 4,382,429, Cl. 123-425.000.

Tamura, Teppei: *See*—
Shindo, Yoshio; Tamura, Teppei; Kabeya, Motoo; Nagahisa, Mitsumasa; and Asano, Hidejirou, 4,383,006, Cl. 428-659.000.

Tanaka, Kazunori; Toki, Hitoshi; Miyazawa, Hisashi; and Eto, Goro, to Futaba Denshi Kogyo K.K. Method of manufacturing a fluorescent display apparatus. 4,382,979, Cl. 427-68.000.

Tanaka, Shunsaku: *See*—
Nishihara, Koji; Hashimoto, Takeshi; Tanaka, Shunsaku; and Sato, Katsuhiko, 4,382,896, Cl. 260-505.00C.

Tanaka, Yoshiaki: *See*—
Hayakawa, Isao; Hiramitsu, Tokiyuki; and Tanaka, Yoshiaki, 4,382,892, Cl. 260-243.300.

Tanioka, Masahiro: *See*—
Hayakawa, Masatoshi; and Tanioka, Masahiro, 4,382,645, Cl. 445-69.000.

Tano, Eiichi; and Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Disablement of shutter release in photographic camera having interchangeable objectives. 4,382,669, Cl. 354-268.000.

Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. String of a vinylidene fluoride synthetic resin composition. 4,382,358, Cl. 57-243.000.

Tappe, Wilhelm: *See*—
Kopineck, Hermann-Josef; Tappe, Wilhelm; and Fabian, Wolfgang, 4,382,374, Cl. 72-202.000.

Tappeiner, Hermann: *See*—
Krugel, Karl-Heinz; Tappeiner, Hermann; Paessler, Ernst-Robert; and Smutny, Kurt, 4,383,243, Cl. 340-310.00R.

TDK Electronics Co., Ltd.: *See*—
Sekine, Masaoki; and Shimazu, Seiki, 4,382,523, Cl. 220-337.000.
Shiba, Haruo, 4,382,565, Cl. 242-199.000.
Shimazu, Seiki; and Sekine, Masaoki, 4,382,522, Cl. 220-337.000.

Teagle, Thomas J. Mixing machines. 4,382,683, Cl. 366-44.000.

Techne (Cambridge) Limited: *See*—
Pearson, James M., 4,382,685, Cl. 366-241.000.

Technik mbH GHT, Gesellschaft fur Hochtemperaturreaktor: *See*—
Naujoks, Manfred; and Hantel, Gerhard, 4,383,325, Cl. 376-381.000.

Tecumseh Products Company: *See*—
MacLeod, John N., 4,383,214, Cl. 322-58.000.

Teegarden, Arlo F.; and Roach, Jerome C., to Trane Company, The. Reciprocating compressor with integral unloader valve. 4,382,749, Cl. 417-295.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Gaillard, Jean, 4,383,228, Cl. 333-173.000.

Temperilli, Aldemio: *See*—
Bernardi, Luigi; Bosisio, Germano; Mantegani, Sergio; Rossi, Alessandro; and Temperilli, Aldemio, 4,382,940, Cl. 424-261.000.

Tenner, Richard B., to Eaton Corporation. Pivoted-actuator switch with PC board switched light indicator. 4,383,155, Cl. 200-315.000.

Tennick, Maurice, to Sendair International Limited. Flow control valve assembly. 4,382,450, Cl. 137-242.000.

Terada, Katsuyuki: *See*—
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, 4,382,413, Cl. 105-163.00R.

Teraji, Tsutomu; Oku, Teruo; and Namiki, Takayuki, to Fujisawa Pharmaceutical Co., Ltd. Isatin derivatives, processes for the preparation thereof and pharmaceutical composition comprising the same. 4,382,934, Cl. 424-250.000.

Teunissen, Antonius J. J. M.: *See*—
van Geem, Paul C.; and Teunissen, Antonius J. J. M., 4,383,127, Cl. 568-801.000.

Texaco Canada Resources, Inc.: *See*—
McCoy, David R.; and Young, Kitchener B., 4,382,852, Cl. 208-188.000.

Texaco Inc.: *See*—
Cole, Edward L.; and Suggitt, Robert M., 4,382,895, Cl. 260-505.00P.
McCoy, David R.; and Young, Kitchener B., 4,382,852, Cl. 208-188.000.
McCoy, David R., 4,382,853, Cl. 208-188.000.
McDaniel, Kenneth G.; and Speranza, George P., 4,383,102, Cl. 528-107.000.
Schulze, Heinz; and Waddill, Harold G., 4,383,054, Cl. 523-131.000.

Texas Instruments Incorporated: *See*—
McFarland, Harry G., 4,383,184, Cl. 307-66.000.

Texier, Pierre: *See*—
Coussot, Gerard; and Texier, Pierre, 4,382,386, Cl. 73-703.000.

Textron Inc.: *See*—
Brandon, George M., 4,383,201, Cl. 315-078.000.

Thayer, Edward B., to United Technologies Corporation. Flap-type nozzle with built-in reverser. 4,382,551, Cl. 239-265.290.

Thiel, Klaus; Stecher, Roland; and Schnetger, Jochen, to Metzeler Kautschuk GmbH. Vulcanizable rubber mixture. 4,383,072, Cl. 524-432.000.

Thoma, Frank; and Oblander, Kurt, to Daimler-Benz Aktiengesellschaft. Fuel injection nozzle for an air-compressing internal combustion engine. 4,382,553, Cl. 239-533.900.

Thomas, Alfred W.; and Harrison, Anthony W., to Girling Limited. Hydraulic braking systems for vehicles. 4,382,364, Cl. 60-567.000.

Thomas, Allan R. Belt winch mounting on vehicle rail. 4,382,736, Cl. 410-104.000.

Thomas, Mark E., to British Petroleum Company Limited, The. Mass transfer equipment. 4,382,901, Cl. 261-114.00A.

Thomaston Mills Inc.: *See*—
Hightower, George H., Jr., 4,382,301, Cl. 2-22.000.

Thompson, Henry A.; Kottman, Clifford; Mueller, Walter H.; and Phebus, Robert E., to United States of America, Army. Measuring of feature for photo interpretation. 4,382,678, Cl. 356-150.000.

Thompson, John S., to FMC Corporation. Use of hypophosphorous acid and its salts to prevent clostridial blowing and formation of clostridial enterotoxins in cheese. 4,382,971, Cl. 426-323.000.

Thompson, William E. Mounting apparatus for rear-view mirrors and the like. 4,382,572, Cl. 248-484.000.

Thomson-CSF: *See*—
Coussot, Gerard; and Texier, Pierre, 4,382,386, Cl. 73-703.000.

Thubeauville, Heinz: *See*—
Wackerbarth, Folkard; Thubeauville, Heinz; and Kleinert, Horst, 4,382,772, Cl. 431-189.000.

Tiebor, John E.: *See*—
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.

Tilbor, Neil, to Ideal Toy Corporation. Toy vehicle game. 4,382,599, Cl. 273-86.00B.

Timex Corporation: *See*—
Rinaldi, Joseph; and Wuthrich, Paul, 4,382,695, Cl. 368-220.000.

Timor, Uzi, to Bell Telephone Laboratories, Incorporated. Spread spectrum FH-MFSK transmitter and receiver. 4,383,323, Cl. 375-1.000.

Tissington, Peter; Giddings, Rodney M.; and Pearse, Michael T., to Ciba-Geigy Corporation. Production of α-cyanobenzyl esters. 4,382,894, Cl. 260-465.00D.

Tittert, Curt, to Braun Aktiengesellschaft. Electrical ignition system for a catalytically heated curling device. 4,382,448, Cl. 132-33.00R.

Titus, Charles H.: *See*—
Bell, Christy W.; Titus, Charles H.; and Pogontchef, Robert Y., 4,382,341, Cl. 34-1.000.
Bell, Christy W.; Titus, Charles H.; and Wittle, John K., 4,382,469, Cl. 166-248.000.

TMX Systems Limited: *See*—
Sassover, Nathan; and Rennie, William A., 4,383,242, Cl. 340-64.000.

Tobias, Michael A., to Mobil Oil Corporation. Epoxy-amine copolymer reaction product and aqueous coating compositions thereof. 4,383,058, Cl. 523-411.000.

Tobias, Michael A.: *See*—
Martinez, Carlos J.; and Tobias, Michael A., 4,382,984, Cl. 427-391.000.

Toda, Haruhiko: *See*—
Higo, Moriaki; Kikuchi, Yasuo; Kitoh, Shinya; Suzuki, Shin-ichi; and Toda, Haruhiko, 4,383,052, Cl. 523-118.000.

Toepke, Ival L., to Bicron Corporation. Encapsulated scintillation detector. 4,383,175, Cl. 250-368.000.

Tokai-Rika-Seisakusho K.K.: *See*—
Kubota, Tatsushi, 4,382,614, Cl. 280-802.000.

Tokayer, Josef, to Orbit BBQ Products Ltd. Industrial cooking machines. 4,382,403, Cl. 99-339.000.

Toki, Hitoshi: *See*—
Tanaka, Kazunori; Toki, Hitoshi; Miyazawa, Hisashi; and Eto, Goro, 4,382,979, Cl. 427-68.000.

Tokumaru, Hisashi; and Nakamura, Akiyoshi, to Minolta Camera Co., Ltd. Inverted telephoto type wide angle lens system. 4,382,662, Cl. 350-458.000.

Tokunaga, Takeshi: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,383,206, Cl. 318-445.000.

Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,382,996, Cl. 428-442.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ishiki, Masanori, 4,383,284, Cl. 360-125.000.
Kurihara, Tetsurou; and Nishio, Kohsaku, 4,383,328, Cl. 378-042.000.
Matsumura, Sadao; Fukuta, Katsuyoshi; and Hirano, Hitoshi, 4,383,174, Cl. 250-338.000.
Mizuyama, Akinori; Ogita, Tadahisa; Okazaki, Shinichi; and Anan, Tsunetoshi, 4,383,191, Cl. 310-59.000.
Nakajima, Shunichi; Takano, Toshimasa; and Hashimoto, Shinichi, 4,382,673, Cl. 355-3.0TR.
Onodera, Toshihiro; Masuda, Youichi; and Nakajima, Akira, 4,383,292, Cl. 363-21.000.
Takagi, Nobuyuki; Kobayashi, Hiroshi; and Yoshida, Okio, 4,383,170, Cl. 250-216.000.

Tolar, Barbara D. Swing seat adapter. 4,382,595, Cl. 272-85.000.

Tomimatsu, Noriyuki: *See*—
Kurahashi, Koichiro; and Tomimatsu, Noriyuki, 4,383,256, Cl. 340-793.000.

Tomita, Seisuke: *See*—
Fujimaki, Tatsuo; Yamaguchi, Shinsuke; Yamada, Tomoharu; and Tomita, Seisuke, 4,383,085, Cl. 525-196.000.
Tomita, Yoshikatsu: *See*—
Suefuji, Kazutaka; Arata, Tetsuya; Tomita, Yoshikatsu; Kotani, Sumihisa; Uchikawa, Naoshi; and Murayama, Akira, 4,382,370, Cl. 62-324.100.
Tomite, Tosio; Tajima, Humio; and Takamastu, Syuichi, to Hitachi, Ltd. Field pole structure of DC motor. 4,383,193, Cl. 310-154.000.
Tomy Kogyo Co., Inc.: *See*—
Minami, Koichi, 4,382,597, Cl. 273-1.00L.
Toole, Nicolle A. Rock crushing machine with dual cam shaft jaw driving mechanism. 4,382,560, Cl. 241-101.200.
Toray Industries, Inc.: *See*—
Iida, Hiroshi, 4,383,064, Cl. 524-100.000.
Ohigashi, Hiroji; Nakanishi, Joshiharu; and Suzuki, Miyo, 4,383,194, Cl. 310-326.000.
Otaki, Yukio; Mineo, Masatoshi; Nakagawa, Kiyoshi; Nishiumi, Shiro; and Aratani, Yoshio, 4,382,992, Cl. 428-373.000.
Torii, Keiichiro: *See*—
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; Torii, Keiichiro; and Saito, Toru, 4,382,413, Cl. 105-163.00R.
Torii, Michihiro; Kihara, Utsuo; Goto, Hirohito; and Sasaki, Isamu, to Fuji Electrochemical Co., Ltd. Process for producing ferrite single crystals. 4,382,839, Cl. 156-616.00R.
Torisawa, Akira: *See*—
Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, 4,382,691, Cl. 368-157.000.
Torng, Hwa C., to Bell Telephone Laboratories, Incorporated. Idle time slot seizure and transmission facilities for loop communication system. 4,383,315, Cl. 370-89.000.
Toro Company, The: *See*—
Hunter, Edwin J., 4,382,556, Cl. 239-715.000.
Torrington Company, The: *See*—
McGuffie, Michael J., 4,382,639, Cl. 308-189.00R.
Toruk, Nicholas: *See*—
Liggett, Allen C.; and Toruk, Nicholas, 4,382,312, Cl. 16-365.000.
Tourtelot, Edward M., Jr. Contoured finger follower variable valve timing mechanism. 4,382,428, Cl. 123-90.160.
Towmotor Corporation: *See*—
Fox, Lawrence E.; Reinsma, Harold L.; and Woody, Albert L., 4,382,634, Cl. 299-37.000.
Toy, James W.: *See*—
Halpern, Peter H.; Toy, James W.; and Patisaul, Charles R., 4,383,322, Cl. 375-1.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,382,525, Cl. 220-456.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Okano, Hiroshi, 4,382,747, Cl. 415-207.000.
Sakai, Ichio; and Otani, Hisao, 4,382,497, Cl. 192-113.00A.
Tracey, Don M.: *See*—
Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., 4,383,257, Cl. 340-825.470.
Trachsler, Dieter: *See*—
Lohse, Friedrich; Trachsler, Dieter; and Jeannerat, Claude, 4,383,107, Cl. 528-323.000.
Trane Company, The: *See*—
Teegarden, Arlo F.; and Roach, Jerome C., 4,382,749, Cl. 417-295.000.
Trans Auto Specialties, Inc.: *See*—
Bowen, Thomas C., 4,382,393, Cl. 74-688.000.
Transamerica DeLaval Inc.: *See*—
Craig, John L., 4,382,570, Cl. 248-74.00R.
Tri-State Oil Tool Industries, Inc.: *See*—
Richardson, Charles N., 4,382,623, Cl. 294-86.320.
Tringale, Philip T.: *See*—
Mitchell, James K.; Villet, Willem C. B.; Tringale, Philip T.; and Chan, Clarence K., 4,382,384, Cl. 73-594.000.
Trochoid Power Corporation: *See*—
Hoffmann, Ralph M., 4,382,755, Cl. 418-61.00A.
Truelock, Donald E.; and Turner, Richard W., to Kay Laboratories, Inc. Heat transfer devices for the scalp. 4,382,446, Cl. 128-402.000.
Tschudin & Heid AG: *See*—
Kleeb, Markus, 4,383,144, Cl. 200-5.00R.
Tsuchiya, Takao; Soneda, Mitsuo; and Nakamura, Isa, to Sony Corporation. Clocking signal drive circuit for bucket brigade device. 4,383,326, Cl. 377-61.000.
Tsuda, Hiroshi: *See*—
Arima, Sumitsugu; and Tsuda, Hiroshi, 4,383,148, Cl. 200-61.540.
Tsukata, Masaharu, to Canon Kabushiki Kaisha. Original document presser. 4,382,677, Cl. 355-76.000.
Tsukishima Kaikai Co., Ltd.: *See*—
Sugamiya, Ryoji; Nakamaru, Kazuto; Takegami, Keizo; Miwa, Koji; and Morita, Minoru, 4,383,121, Cl. 562-602.000.
Tsuruoka, Takashi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,382,812, Cl. 71-86.000.
Tu Xuan, Mai, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Single phase bipolar stepping motor having two rotation senses. 4,382,693, Cl. 368-160.000.
Tung, William C. T., to Goodyear Tire & Rubber Company, The. High melt strength elastomeric copolyesters. 4,383,106, Cl. 528-295.300.
Turner, Norman, to Varian Associates, Inc. Particle beam accelerator. 4,383,180, Cl. 250-492.200.
Turner, Richard W.: *See*—
Truelock, Donald E.; and Turner, Richard W., 4,382,446, Cl. 128-402.000.
Twin City International, Inc.: *See*—
Holler, James A.; Stanton, William B.; Spongr, Jerry J.; Joffe, Boris B.; Raffelsberger, Peter W.; and Tiebor, John E., 4,383,172, Cl. 250-308.000.
Tyrner, Joseph M. Triodyne. 4,383,213, Cl. 322-53.000.
Uba, Toshio: *See*—
McClelland, Donald H.; Uba, Toshio; and Ching, Larry K. W., 4,383,011, Cl. 429-54.000.
Uchikawa, Naoshi: *See*—
Suefuji, Kazutaka; Arata, Tetsuya; Tomita, Yoshikatsu; Kotani, Sumihisa; Uchikawa, Naoshi; and Murayama, Akira, 4,382,370, Cl. 62-324.100.
Ucinhazska, Bruno; Disteldorf, Josef; Hubel, Werner; Brandt, Siegfried; and Haage, Hans-Jurgen. Device for the fast changing of the operating method of spraying units on wheels. 4,382,555, Cl. 239-714.000.
Uda, Ryoji: *See*—
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, 4,382,426, Cl. 123-41.100.
Ueda, Jun: *See*—
Shida, Masaharu; Torisawa, Akira; Ueda, Jun; Mandai, Masaaki; and Sato, Katsuhiko, 4,382,691, Cl. 368-157.000.
Ueda, Takayuki: *See*—
Inazaki, Koji; Ueda, Takayuki; Oka, Toshihiro; and Kawai, Rippo, 4,382,516, Cl. 209-517.000.
Uehori, Yuji: *See*—
Yamamoto, Hiroyasu; Nakajima, Koe; Kawaharada, Minoru; and Uehori, Yuji, 4,382,375, Cl. 72-205.000.
Ukai, Yasuhiro: *See*—
Aoki, Shigeo; Isogami, Shuzo; Hosoda, Motomi; Ukai, Yasuhiro; and Nagayoshi, Tatsuo, 4,382,659, Cl. 350-335.000.
Ulmer, Richard W., to Motorola, Inc. CMOS Operational amplifier employing push-pull output stage. 4,383,223, Cl. 330-253.000.
Umeda, Tadashi: *See*—
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,382,674, Cl. 355-14.0CH.
Umehara, Nobuo; Yamashita, Maki; and Yoshizaki, Akira, to Minolta Camera Kabushiki Kaisha. Compact cameras using a disk type film cartridge. 4,382,668, Cl. 354-121.000.
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Formimidoyl A and B useful as semi-synthetic aminoglycosidic antibiotics. 4,382,926, Cl. 424-181.000.
Unangst, Paul C.: *See*—
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,382,939, Cl. 424-256.000.
Union Carbide Corporation: *See*—
D'Silva, Themistocles D. J., 4,382,957, Cl. 424-327.000.
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,383,095, Cl. 526-88.000.
Union Tank Car Company: *See*—
Green, Daniel R., 4,382,724, Cl. 406-130.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Restall, James E., 4,382,976, Cl. 427-34.000.
United States Gypsum Company: *See*—
Porter, William F.; Schwab, Shirley J.; and Schneider, Karl E., 4,382,809, Cl. 65-4.400.
United States of America
Agriculture: *See*—
McGovern, Terrence P.; and Schreck, Carl E., 4,382,950, Cl. 424-274.000.
Shasha, Baruch S., 4,382,813, Cl. 71-88.000.
Army: *See*—
Ambrosini, Leonard R., 4,382,411, Cl. 102-523.000.
Burns, Bruce P., 4,382,409, Cl. 102-289.000.
Hemmings, Davis L., 4,382,609, Cl. 280-415.00A.
Murphy, Joseph; and Hester, William A., 4,382,977, Cl. 427-42.000.
Thompson, Henry A.; Kottman, Clifford; Mueller, Walter H.; and Phebus, Robert E., 4,382,678, Cl. 356-150.000.
Energy: *See*—
Armijo, James R.; and Searcy, Jimmie Q., 4,383,014, Cl. 429-112.000.
Frank, Donald N., 4,382,335, Cl. 33-125.00B.
Gregg, David W., 4,382,850, Cl. 208-11.00R.
Haas, Paul A., 4,382,885, Cl. 252-635.000.
Kothmann, Richard E., 4,383,009, Cl. 429-39.000.
Voight, Edward T., 4,382,607, Cl. 280-408.000.
National Aeronautics and Space Administration: *See*—
Sinha, Mahadeva P.; Giffin, Charles E.; Norris, David D.; and Friedlander, Sheldon K., 4,383,171, Cl. 250-282.000.
National Security Agency: *See*—
Goldberg, Mark W., 4,383,261, Cl. 346-1.100.
Navy: *See*—
Assard, Gerald L., 4,383,247, Cl. 340-347.0AD.
Geopfarth, Robert N., 4,383,300, Cl. 364-558.000.
Morin, Richard J., 4,383,258, Cl. 343-5.0SC.
Neal, Jesse R., Jr.; Bleile, Henry R.; and Humphries, Truman W., 4,383,061, Cl. 523-458.000.
Reed, Robert C., 4,383,312, Cl. 370-13.000.

U.S. Philips Corporation: *See—*
Brewer, Robert J., 4,383,185, Cl. 307-108.000.
de Ronde, Frans C., 4,383,227, Cl. 333-121.000.
Perduijn, David J.; and Verberkt, Jacobus, 4,383,196, Cl. 310-358.000.
Van Zon, Adrianus J. H. J.; and Gelens, Johannes R., 4,383,200, Cl. 315-57.000.

United Technologies Corporation: *See—*
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,383,299, Cl. 364-434.000.
Thayer, Edward B., 4,382,551, Cl. 239-265.290.

Unitika Ltd.: *See—*
Sasaki, Akio; and Echigo, Yoshiaki, 4,383,104, Cl. 528-148.000.

Universal Mobility, Inc.: *See—*
Sullivan, Donald P., 4,382,412, Cl. 104-124.000.

Universite d'Orleans: *See—*
Buzas, Andre; Melon, Jean-Marie; Lavielle, Gilbert; and Champagnac, Andre, 4,382,935, Cl. 424-250.000.

University of Birmingham, The: *See—*
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., 4,382,925, Cl. 424-180.000.

University of California, The Regents of The: *See—*
Mitchell, James K.; Villet, Willem C. B.; Tringale, Philip T.; and Chan, Clarence K., 4,382,384, Cl. 73-594.000.

University of Melbourne, The: *See—*
Roberts, Ian D., 4,382,367, Cl. 62-197.000.

University of Minnesota, Regents of the: *See—*
Vince, Robert, 4,383,114, Cl. 544-277.000.

University of Utah: *See—*
Kruger, Robert A., 4,383,327, Cl. 378-19.000.

University Patents, Inc.: *See—*
Scherberg, Neal H., 4,383,033, Cl. 435-68.000.

Upjohn Company, The: *See—*
Argoudelis, Alexander D.; and Stroman, David W., 4,383,109, Cl. 536-16.500.

Uram, John, Jr., to Goodyear Aerospace Corporation. Process for preparing low haze, high temperature-resistant laminates. 4,382,832, Cl. 156-99.000.

Urani, Angelo; and Gaia, Aldino J., to McGraw-Edison Company. Heat limiters and method of manufacture. 4,383,236, Cl. 337-403.000.

Uroshevich, Miroslav, to Alpha Solarco Inc. Solar energy cell and method of manufacture. 4,383,130, Cl. 136-261.000.

Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,382,922, Cl. 424-177.000.

Valic, Josip: *See—*
Bregovic, Josip; and Valic, Josip, 4,382,577, Cl. 251-43.000.

Valyi, Emery I. Injection mold dwell cycle. 4,382,905, Cl. 264-520.000.

van der Heijden, Joahnnes. Dispenser for air-treating vapors. 4,382,548, Cl. 239-56.000.

Vanderlaan, Robert D., to Pneumo Corporation. Opposed piston type free piston engine pump unit. 4,382,748, Cl. 417-11.000.

Van der Lely, Ary; and Kuipers, Arie, to C. Van der Lely N.V. Soil cultivating machine. 4,382,473, Cl. 172-33.000.

van der Lely, Cornelis. Plow. 4,382,472, Cl. 172-33.000.

Van Der Puy, Michael; and Piskorz, Ronald F., to Allied Corporation. Production of monofluorotrichloroethane. 4,383,128, Cl. 570-165.000.

van Drimmelen, Nicolaas J.; and Loevendie, Rudolf H., to IHC Holland N.V. Floating vessel with moon well and ice guard therefor. 4,382,419, Cl. 114-313.000.

van Geem, Paul C.; and Teunissen, Antonius J. J. M., to Stamicarbon, B.V. Oxidation of benzoic acids to phenols. 4,383,127, Cl. 568-801.000.

Van Sloun, Peter H. Voltage doubler with delayed loading. 4,383,294, Cl. 363-60.000.

Van Wormer, William D., Jr.; Gniewek, Stephen A.; and Schlotterbeck, David L., to Beckman Instruments, Inc. Assembly for holding a filter. 4,382,808, Cl. 55-418.000.

Van Zon, Adrianus J. H. J.; and Gelens, Johannes R., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,383,200, Cl. 315-57.000.

Varian Associates, Inc.: *See—*
Turner, Norman, 4,383,180, Cl. 250-492.200.

Varney, John: *See—*
Kumar, Niraj; and Varney, John, 4,382,696, Cl. 368-240.000.

Vassalli, Elio. Element for the insulation of the outer wall of a building, and process and apparatus for its manufacture. 4,382,759, Cl. 425-115.000.

Vayssiere, Pierre; and Grosjean, Jean-Claude, to Institute de Recherches de la Siderurgie Francaise. Process for periodically and pneumatically stirring a bath of molten metal. 4,382,817, Cl. 75-59.000.

Vega, Manuel G.: *See—*
Pandya, Mahendra K.; and Vega, Manuel G., 4,382,590, Cl. 269-87.200.

Venture Innovations, Inc.: *See—*
House, Roy F., 4,382,868, Cl. 252-28.000.

Verberkt, Jacobus: *See—*
Perduijn, David J.; and Verberkt, Jacobus, 4,383,196, Cl. 310-358.000.

Verhelst, Gabriel A.: *See—*
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., 4,382,925, Cl. 424-180.000.

Verzella, David J.: *See—*
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,383,299, Cl. 364-434.000.

Vesborg, Steen, to Colgate-Palmolive Company. Transport and display container. 4,382,504, Cl. 206-44.00R.

Vetco, Inc.: *See—*
Warren, David A.; and McCrory, Edwin D., Jr., 4,382,421, Cl. 118-663.000.

Vezzani, Luciano. Machine for compressing and cutting random loaded scrap metal. 4,382,406, Cl. 100-98.00R.

Victor Company of Japan, Limited: *See—*
Fujiki, Kuniharu, 4,383,000, Cl. 428-522.000.
Fujiki, Kuniharu, 4,383,001, Cl. 428-522.000.
Hirata, Atsumi, 4,383,309, Cl. 369-77.000.

Vieira, Frank. Gameboard with metallic ball and magnetic target and velour surface. 4,382,600, Cl. 273-118.00R.

Vigor, Charles W.: *See—*
Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,382,323, Cl. 29-157.00R.

Villani, Mauro: *See—*
Lunardi, Alceste; Villani, Mauro; and Grilli, Walter, 4,382,741, Cl. 414-403.000.

Villet, Willem C. B.: *See—*
Mitchell, James K.; Villet, Willem C. B.; Tringale, Philip T.; and Chan, Clarence K., 4,382,384, Cl. 73-594.000.

Vince, Robert, to University of Minnesota, Regents of the. Adenosine deaminase resistant antiviral purine arabinonucleosides. 4,383,114, Cl. 544-277.000.

Vogel, F. Lincoln; and Forsman, William C. Lamellar carbon-nitrosyl or nitronium salt compositions. 4,382,882, Cl. 252-503.000.

Vogelsong, Thomas L.; and Engeler, William E., to General Electric Company. Charge transfer filter providing recursive transfer functions. 4,383,187, Cl. 377-57.000.

Voight, Edward T., to United States of America, Energy. Steering system for a train of rail-less vehicles. 4,382,607, Cl. 280-408.000.

Voland, Elmo W., to Emhart Industries, Inc. Clutch for a timing mechanism. 4,382,689, Cl. 368-76.000.

Vomel, Wolfgang: *See—*
Stahl, Peter; Vomel, Wolfgang; and Seidel, Hans, 4,383,032, Cl. 435-23.000.

Vonach, Walter, to Schober, Wilfried. Injection liner for a borehole closure. 4,382,720, Cl. 405-269.000.

von Recklinghausen, Daniel R., to Electro Audio Dynamics, Inc. Loudspeaker systems. 4,383,134, Cl. 179-1.00D.

Voss Steel Corporation: *See—*
Beecher, Brazier K., 4,382,916, Cl. 423-481.000.

Vovk, Marko E.; and Radisek, Theodore. Portable ski vise and ski rack. 4,382,588, Cl. 269-43.000.

Vuilleumier, Raymond: *See—*
Grandjean, Pierre-Andre; Cadman, Martyn-Andrew; Vuilleumier, Raymond; and Guye, Raymond, 4,383,255, Cl. 340-764.000.

Vural, Gulertan; and Carle, Udo, to Koehring GmbH - Bomag Division. Mass compensated impacting apparatus. 4,382,715, Cl. 404-133.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Schirmer, Henry G.; and Gillio-Tos, Mario, 4,382,513, Cl. 206-484.000.

Wacker-Chemie GmbH: *See—*
Authier, Bernhard, 4,382,838, Cl. 156-616.00R.

Wackerbarth, Folkard; Thubeauville, Heinz; and Kleinert, Horst, to Dr. C. Otto & Comp. G.m.b.H. Insert tubes for rich gas burners in the heating flues of coke ovens and method and apparatus for inserting or removing the same. 4,382,772, Cl. 431-189.000.

Wada, Masaru: *See—*
Shimizu, Hirokazu; Wada, Masaru; Sugino, Takashi; and Itoh, Kunio, 4,383,319, Cl. 372-45.000.

Waddill, Harold G.: *See—*
Schulze, Heinz; and Waddill, Harold G., 4,383,054, Cl. 523-131.000.

Wadsworth, Larry C.; and Davis, Wayne T., to Surgikos, Inc. Method for testing filtration efficiency. 4,382,378, Cl. 73-38.000.

Wagner, Burkhard E.: *See—*
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,383,095, Cl. 526-88.000.

Wagner, David L.: *See—*
Anderson, Birger O.; and Wagner, David L., 4,382,728, Cl. 409-137.000.

Wagner, Kuno: *See—*
Meyborg, Holger; Wagner, Kuno; Barnes, James M.; and Salzburg, Herbert, 4,383,051, Cl. 521-176.000.

Wakimasu, Mitsuhiro: *See—*
Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kawai, Kiyohisa, 4,382,923, Cl. 424-177.000.

Walker, Brooks. Carrier for garment bags and the like. 4,383,141, Cl. 190-18.00A.

Walker, Richard T.: *See—*
de Clercq, Erik; Verhelst, Gabriel A.; Jones, Albert S.; and Walker, Richard T., 4,382,925, Cl. 424-180.000.

Wang, Jish M., to General Electric Company. Multilevel liquid sensing system. 4,382,382, Cl. 73-304.00R.

Wang, Patricia C.; and Wingard, Robert E., Jr., to Dynapol. Free amine-containing polymeric dyes. 4,382,800, Cl. 8-404.000.

Ward, Clifford; and Johnson, Charles A., III, to Ashland Oil, Inc. Process for removal of hydroxy- and/or mercapto-substituted hydrocarbons from coal liquids. 4,382,855, Cl. 208-236.000.

Warner-Lambert Company: *See—*
Bloem, Russell J.; Bunge, Richard H.; and French, James C., 4,382,952, Cl. 424-279.000.
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,382,939, Cl. 424-256.000.

Warren, David A.; and McCrory, Edwin D., Jr., to Vetco, Inc. Tube coating apparatus. 4,382,421, Cl. 118-663.000.

Warrington, Inc.: *See*—
Olivieri, Icaro, 4,382,616, Cl. 280-825.000.

Washino, Shoichi; and Nosaka, Eiiho, to Mitsubishi Denki Kabushiki Kaisha. Electron gun. 4,383,199, Cl. 315-15.000.

Watanabe, Kunio: *See*—
Ozawa, Masakazu; Watanabe, Kunio; Kojima, Kiyohide; Seito, Shinichi; and Miyazaki, Takashi, 4,383,263, Cl. 346-140.00R.

Watanabe, Tetsuro: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,382,812, Cl. 71-86.000.

Water Pollution Control Corporation: *See*—
Schmit, Frank L.; Redmon, David T.; and Ewing, Lloyd, 4,382,867, Cl. 210-754.000.

Water Services of America, Inc.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,382,465, Cl. 165-95.000.

Watson, Douglas E. Weighted training vest having constant weight distribution. 4,382,302, Cl. 2-102.000.

Watton, John F.: *See*—
Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,382,323, Cl. 29-157.00R.

Watts, John R. Door-closure apparatus. 4,382,311, Cl. 16-66.000.

Wean United, Inc.: *See*—
Ellis, Robert S., deceased, 4,383,162, Cl. 219-100.000.

Webb, Paul P., to RCA Corporation. Avalanche photodiode and method of making same. 4,383,267, Cl. 357-30.000.

Weber, Gerhard. Method for treatment of psoriasis. 4,382,921, Cl. 424-177.000.

Weiershausen, Rolf: *See*—
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Weiershausen, Rolf, 4,382,842, Cl. 202-263.000.

Weigel, Peter; and Schmeykal, Rudolf, to Nixdorf Computer AG. Device for dispensing sheet material out of a closed receptacle. 4,382,594, Cl. 271-272.000.

Weil, Joachim; and Sattelmeyer, Richard, to Hoechst Aktiengesellschaft. Rubber mixtures and vulcanizates produced therefrom. 4,383,005, Cl. 428-625.000.

Weiss, Richard: *See*—
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,382,358, Cl. 57-243.000.

Weitzel, Stephen D.: *See*—
Dorler, Jack A.; Jenkins, Michael O.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,383,216, Cl. 323-282.000.

Wells, James N.: *See*—
Gasper, Alton J.; and Wells, James N., 4,383,079, Cl. 524-767.000.

Welsch, John H., to Metropolitan Wire Corporation. Panels for holding printed circuit boards. 4,382,517, Cl. 211-41.000.

Wem, James W., to Imperial Chemical Industries PLC. Centrifugal gas-liquid contact apparatus. 4,382,900, Cl. 261-89.000.

Wendler, Paul O.: *See*—
Chronowski, Thomas G.; and Wendler, Paul O., 4,382,756, Cl. 418-133.000.

Wessling, Ritchie A.; Yats, Larry D.; and Perry, William O., to Dow Chemical Company, The. Cationic resin curable with acid catalyzed cross-linkers. 4,383,073, Cl. 525-486.000.

Western Electric Co., Inc.: *See*—
Rapp, Willard E., 4,382,456, Cl. 140-123.000.

Westinghouse Electric Corp.: *See*—
Buzzelli, Edward S., 4,383,015, Cl. 429-206.000.
Cromer, Charles F.; and Freeman, Willie B., 4,383,150, Cl. 200-144.0AP.
Yannopoulos, Lympexios N., 4,382,974, Cl. 427-5.000.

Westman, Erik: *See*—
Larsson, Hans G.; and Westman, Erik, 4,382,903, Cl. 264-12.000.

Weston, Allen H., to Keiper U.S.A., Inc. Combination adjustment seat back hinge fitting. 4,382,630, Cl. 297-362.000.

Weyerhaeuser Company: *See*—
Muise, Herbert D., 4,382,537, Cl. 229-39.00R.

Wheatley, Nigel J.; and Andrews, Martyn P., to Plessey Overseas Limited. Data processing system including internal register addressing arrangements. 4,383,297, Cl. 364-200.000.

Wheeler, William J.: *See*—
Lunn, William H. W.; and Wheeler, William J., 4,382,931, Cl. 424-246.000.
Lunn, William H. W.; and Wheeler, William J., 4,382,932, Cl. 424-246.000.

Whillans, Francis D., to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Process for protecting magnetic particles with chromium oxide. 4,382,982, Cl. 427-130.000.

Whitehurst, Darrell D.; and Yan, Tsoung Y., to Mobil Oil Corporation. Continuous reaction/separation method for solution polymerization of olefins. 4,383,094, Cl. 526-88.000.

Whitmore, Peter: *See*—
Peacey, John G.; Crowell, William F.; and Whitmore, Peter, 4,382,778, Cl. 432-18.000.

Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., to Cincinnati Milacron Inc. Apparatus for high rate production of biaxially oriented thermoplastic articles. 4,382,760, Cl. 425-139.000.

Widmann, Dietrich: *See*—
Pfleiderer, Hans-Jorg; and Widmann, Dietrich, 4,382,826, Cl. 148-1.500.

Wiget, Fridolin; and Besson, Rene, to Ebauches, S.A. Analog-display electronic timepiece comprising a divider with an adjustable division factor. 4,382,692, Cl. 368-157.000.

Wiley, Robert E.: *See*—
Stoetzer, Steven R.; and Wiley, Robert E., 4,382,981, Cl. 427-105.000.

Wilharm, Fred B., to St. Regis Paper Company. Valved lined container. 4,382,538, Cl. 229-62.500.

Wilhelms, Otto-Henning: *See*—
Winter, Werner; Friebe, Walter-Gunar; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,382,943, Cl. 424-267.000.

Wilkinson, Rudolph P. Apparatus and method for recharging an energy storage device. 4,383,210, Cl. 320-2.000.

Williams, Donald L., to Champion International Corporation. Dispenser carton. 4,382,514, Cl. 206-626.000.

Willis, Brian J.; Fischetti, Frank, Jr.; and Eilerman, Robert G., to Fritzsche Dodge & Olcott Inc. Flavoring compositions and flavored comestibles containing alkyl 2,3-dihydro-3(1'-hydroxyalkylidene)-2-oxo-5-alkylfuran-4-carboxylates. 4,382,972, Cl. 426-536.000.

Wilson, Geoffrey; and Kayamoto, Masami, to Kaiser Aluminum & Chemical Corporation. Ni/Co Mo P on titania-alumina hydrodesulfurizing catalyst and process of hydrodesulfurizing using the same. 4,382,854, Cl. 208-216.00R.

Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., to Burnup & Sims Inc. Apparatus for pulling cable through underground conduit. 4,382,581, Cl. 254-134.3PT.

Wingard, Robert E., Jr.: *See*—
Wang, Patricia C.; and Wingard, Robert E., Jr., 4,382,800, Cl. 8-404.000.

Winkler, Heinrich: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,382,805, Cl. 55-2.000.

Winter, Werner; Friebe, Walter-Gunar; Roesch, Androniki; and Wilhelms, Otto-Henning, to Boehringer Mannheim GmbH. Anti-allergic aryl ether derivatives. 4,382,943, Cl. 424-267.000.

Wirth, Hans-Joachim: *See*—
Binder, Helmut; Haar, Gerhard; Schmid, Eckhardt; and Wirth, Hans-Joachim, 4,383,290, Cl. 362-290.000.

Withers, Robin A.: *See*—
Baker, Alvin W.; DeVellis, Robert; Martin, Patrick H.; and Withers, Robin A., 4,383,056, Cl. 523-328.000.

Wittle, John K.: *See*—
Bell, Christy W.; Titus, Charles H.; and Wittle, John K., 4,382,469, Cl. 166-248.000.

Wolf, Elmar; and Gras, Rainer. Single component enamels based on blocked polyisocyanurate polyisocyanates. 4,383,076, Cl. 524-589.000.

Wollam, Carl A.: *See*—
Gailey, J. Lynn; and Wollam, Carl A., 4,382,354, Cl. 52-521.000.

Wong, Joe: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,383,003, Cl. 428-611.000.

Woo, Gar L.; and Parker, Phillip H., to Chevron Research Company. Stabilized polypyrrolidone composition. 4,383,065, Cl. 524-114.000.

Wood, Charles L., to Ball Corporation. Programmable speed controller. 4,382,810, Cl. 65-29.000.

Woods, James E., Jr.; and Maldonado, Eduardo A. B., to Iowa State University Research Foundation, Inc. Self-contained passive solar heating system. 4,382,437, Cl. 126-433.000.

Woody, Albert L.: *See*—
Fox, Lawrence E.; Reinsma, Harold L.; and Woody, Albert L., 4,382,634, Cl. 299-37.000.

Work, Dale E.: *See*—
Gungle, W. Calvin; Keeffe, William M.; and Work, Dale E., 4,383,197, Cl. 313-38.000.

World Navigation Electronics Inc.: *See*—
Rader, Carl J., 4,383,259, Cl. 343-103.000.

Wright, Stuart C.: *See*—
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,383,299, Cl. 364-434.000.

Wundling, Herbert: *See*—
Karl, Leopold; Batz, Manfred; and Wundling, Herbert, 4,382,664, Cl. 353-111.000.

Wuthrich, Paul: *See*—
Rinaldi, Joseph; and Wuthrich, Paul, 4,382,695, Cl. 368-220.000.

Xenell Corporation: *See*—
Fajt, John; and Neal, James V., Jr., 4,382,322, Cl. 228-103.000.

Xerox Corporation: *See*—
Boykin, Richard C., 4,382,672, Cl. 355-1.000.
Gross, Thomas D.; and Jagger, Brian E., 4,382,703, Cl. 400-257.000.

Yamada, Noboru; Takenaga, Mutsuo; and Nishiuchi, Kenichi, to Matsushita Electric Industrial Co., Ltd. Recording medium and recording system. 4,383,029, Cl. 430-541.000.

Yamada, Tomoharu: *See*—
Fujimaki, Tatsuo; Yamaguchi, Shinsuke; Yamada, Tomoharu; and Tomita, Seisuke, 4,383,085, Cl. 525-196.000.

Yamaguchi, Shinsuke: *See*—
Fujimaki, Tatsuo; Yamaguchi, Shinsuke; Yamada, Tomoharu; and Tomita, Seisuke, 4,383,085, Cl. 525-196.000.

Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Torque converter with lockup clutch unit. 4,382,496, Cl. 192-3.290.

Yamamoto, Hiroyasu; Nakajima, Koe; Kawaharada, Minoru; and Uehori, Yuji, to Nippon Steel Corporation. Method of rolling metal strip. 4,382,375, Cl. 72-205.000.

Yamamoto, Hitoshi: *See—*
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, 4,382,426, Cl. 123-41.100.

Yamamoto, Takaya: *See—*
Sakai, Kazuo; Matsushima, Yuichi; Akiba, Shigeyuki; and Yamamoto, Takaya, 4,383,266, Cl. 357-13.000.

Yamamoto, Tamechika; Saitoh, Sumio; Yoshimura, Hikoji; and Yoshimura, Masaru, to Catalysts & Chemicals Ind. Co., Ltd. Process of preparing coating compositions comprising polyvinyl butyral and colloidal silica. 4,383,057, Cl. 523-333.000.

Yamamura, Mitsuzi, to Fuji Kiko Kabushiki Kaisha. Seat belt buckle. 4,382,320, Cl. 24-230.00A.

Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, to Aisin Seiki Kabushiki Kaisha. Temperature switch having a magnetically soft amorphous metal member. 4,383,231, Cl. 335-146.000.

Yamashita, Maki: *See—*
Umehara, Nobuo; Yamashita, Maki; and Yoshizaki, Akira, 4,382,668, Cl. 354-121.000.

Yamauchi, Koji: *See—*
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,383,206, Cl. 318-445.000.

Yamazoe, Hiroshi: *See—*
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,382,454, Cl. 138-140.000.

Yan, Tsoung Y.: *See—*
Whitehurst, Darrell D.; and Yan, Tsoung Y., 4,383,094, Cl. 526-88.000.

Yanagisawa, Masayasu: *See—*
Kitsu, Seiki; Yanagisawa, Masayasu; and Kobayashi, Hitoshi, 4,382,348, Cl. 47-59.000.

Yannopoulos, Lympexios N., to Westinghouse Electric Corp. Synthetic monazite coated nuclear waste containing glass. 4,382,974, Cl. 427-5.000.

Yano, Susumu: *See—*
Horie, Kiyoshi; Morita, Yoshiaki; Mikamori, Yukio; Suzuki, Masaharu; and Yano, Susumu, 4,382,914, Cl. 423-300.000.

Yates, Ronald L., to Dow Chemical Company, The. Thermal catalytic hydrosilylation of carbonyl compounds. 4,383,120, Cl. 556-470.000.

Yates, Thomas P.: *See—*
Abel, Michael L.; and Yates, Thomas P., 4,382,870, Cl. 252-75.000.

Yats, Larry D.: *See—*
Wessling, Ritchie A.; Yats, Larry D.; and Perry, William O., 4,383,073, Cl. 525-486.000.

Yatsushiro, Kenji; and Godkin, Mikhail, to Singer Company, The. Magnetic latch valve. 4,383,234, Cl. 335-253.000.

Yavrouian, Andre H.: *See—*
Gupta, Amitava; Ingham, John D.; and Yavrouian, Andre H., 4,383,129, Cl. 136-251.000.

Yonek, Kenneth P.: *See—*
Markusch, Peter H.; Potter, Terry A.; Yonek, Kenneth P.; and Rosthauser, James W., 4,383,070, Cl. 524-317.000.

Yonekura, Seiji: *See—*
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Koji; and Suzuki, Mitsuo, 4,383,206, Cl. 318-445.000.

Yonezawa, Akira; and Shirota, Kohei, to International Precision Incorporated. Objective lens for electron microscope. 4,383,176, Cl. 250-396.0ML.

York, Lawrence R.: *See—*
de Figueiredo, Mario P.; York, Lawrence R.; and Long, James L., 4,382,973, Cl. 426-614.000.

York-Shipley, Inc.: *See—*
Korenberg, Jakob, 4,382,415, Cl. 110-245.000.

Yoshida, Kunio: *See—*
Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, 4,383,306, Cl. 364-900.000.

Yoshida, Okio: *See—*
Takagi, Nobuyuki; Kobayashi, Hiroshi; and Yoshida, Okio, 4,383,170, Cl. 250-216.000.

Yoshida, Shigeru: *See—*
Aoki, Masaki; Yoshida, Shigeru; Yamazoe, Hiroshi; and Nagasawa, Masahiro, 4,382,454, Cl. 138-140.000.

Yoshimi Mfg., Co., Ltd.: *See—*
Takimoto, Yoshimi, 4,382,318, Cl. 24-188.000.

Yoshimura, Hikoji: *See—*
Yamamoto, Tamechika; Saitoh, Sumio; Yoshimura, Hikoji; and Yoshimura, Masaru, 4,383,057, Cl. 523-333.000.

Yoshimura, Masaru: *See—*
Yamamoto, Tamechika; Saitoh, Sumio; Yoshimura, Hikoji; and Yoshimura, Masaru, 4,383,057, Cl. 523-333.000.

Yoshino, Masato, to Sumitomo Electric Industries, Ltd. Deceleration-sensitive brake pressure control device. 4,382,636, Cl. 303-6.00C.

Yoshioka, Yoshihiro: *See—*
Harima, Hiroshi; Yoshioka, Yoshihiro; Kimura, Toshihiro; and Takasaki, Kazuhiro, 4,382,999, Cl. 428-494.000.

Yoshizaki, Akira: *See—*
Umehara, Nobuo; Yamashita, Maki; and Yoshizaki, Akira, 4,382,668, Cl. 354-121.000.

Young, Jerry W.: *See—*
Eddy, William R.; Oliver, Ronald R.; and Young, Jerry W., 4,382,422, Cl. 118-669.000.

Young, Kitchener B.: *See—*
McCoy, David R.; and Young, Kitchener B., 4,382,852, Cl. 208-188.000.

Youngren, Fred R. Shelf life indicator. 4,382,700, Cl. 374-102.000.

Younkin, Harry A.; Mehnert, Gottfried; and Roos, Uwe V., to Hercules Incorporated. Container forming apparatus. 4,382,769, Cl. 425-525.000.

Yuyama, Masahiro; and Futagami, Mikio, to Sumitomo Chemical Company, Limited. Method for the formation of abrasion-resistant coating film. 4,382,983, Cl. 427-386.000.

Zachry, Clyde L.: *See—*
Layton, Wilbur T.; and Zachry, Clyde L., 4,383,235, Cl. 336-200.000.

Zahnradfabrik Friedrichshafen AG: *See—*
Meyerle, Michael; Lechner, Gisbert; and Ott, Anton, 4,382,392, Cl. 74-687.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,382,926, Cl. 424-181.000.

Zelina, John H., Jr., to Lighting Systems, Inc. Matrix switch. 4,383,145, Cl. 200-16.00D.

Zwingmann, Gerhard, to Degussa Aktiengesellschaft. Gold free alloys for firing on ceramic compositions. 4,382,909, Cl. 420-588.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF MAY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Borg-Warner Corporation: *See*—
Nutten, Warren D.; and Phillips, Bernard C., Re. 31,233, Cl. 123-330.000.

Butera, Anthony W. Calibrated oil burner filter paper. Re. 31,232, Cl. 73-28.000.

Cousse, Henri; and Mouzin, Gilbert, to Pierre Fabre S.A. 2-Benzoyl-4-nitroanilides and their use as medicaments. Re. 31,237, Cl. 424-248.540.

Des Jardins, John M.: *See*—
Jureit, John C.; and Des Jardins, John M., Re. 31,234, Cl. 403-163.000.

Gang-Nail Systems, Inc.: *See*—
Jureit, John C.; and Des Jardins, John M., Re. 31,234, Cl. 403-163.000.

Jureit, John C.; and Des Jardins, John M., to Gang-Nail Systems, Inc. Hinged connector plate. Re. 31,234, Cl. 403-163.000.

Kodama, Kenji: *See*—
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamostu, Re. 31,236, Cl. 423-243.000.

Konno, Koji: *See*—
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamostu, Re. 31,236, Cl. 423-243.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamostu, Re. 31,236, Cl. 423-243.000.

Lemelson, Jerome H. Information storage and reproduction system. Re. 31,239, Cl. 358-102.000.

McNeely, Michael L.; and Rees, Herbert, to RCA Corporation. Method for producing injection molded and centrally apertured disc records. Re. 31,235, Cl. 264-106.000.

Miyamori, Tamostu: *See*—
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamostu, Re. 31,236, Cl. 423-243.000.

Mouzin, Gilbert: *See*—
Cousse, Henri; and Mouzin, Gilbert, Re. 31,237, Cl. 424-248.540.

Mutton, Jon C.; and Unger, Peter J., to Tektronix, Inc. Electrographic copier with one-piece belt and styli. Re. 31,238, Cl. 346-155.000.

Nutten, Warren D.; and Phillips, Bernard C., to Borg-Warner Corporation. Charge forming method and apparatus with overspeed governor. Re. 31,233, Cl. 123-330.000.

Phillips, Bernard C.: *See*—
Nutten, Warren D.; and Phillips, Bernard C., Re. 31,233, Cl. 123-330.000.

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CLASS 66

213 4,382,371

CLASS 70

355 4,382,372

CLASS 71

86 4,382,812
88 4,382,813
4,382,814
90 4,382,815
4,382,816

CLASS 72

57 4,382,373
202 4,382,374
205 4,382,375
4,382,376

CLASS 73

28 Re.31,232
35 4,382,377
38 4,382,378
46 4,382,379
73 4,382,380
151 4,382,381
304 R 4,382,382
592 4,382,383
594 4,382,384
702 4,382,385
703 4,382,386
861.17 4,382,387
861.18 4,382,388

CLASS 74

422 4,382,389
567 4,382,390
640 4,382,391
687 4,382,392
688 4,382,393

CLASS 75

59 4,382,817

CLASS 82

34 D 4,382,394

CLASS 83

71 4,382,395
98 4,382,396
508 4,382,397

CLASS 84

1.19 4,382,398

CLASS 91

486 4,382,399

CLASS 98

40 C 4,382,401
40 DL 4,382,400

CLASS 99

295 4,382,402
339 4,382,403
472 4,382,404

CLASS 100

7 4,382,405
98 R 4,382,406

CLASS 101

405 4,382,407

CLASS 102

216 4,382,408
289 4,382,409
310 4,382,410
523 4,382,411

CLASS 104

124 4,382,412

CLASS 105

163 R 4,382,413

CLASS 106

19 4,382,819
90 4,382,820
272 4,382,821
304 4,382,822

CLASS 108

56.1 4,382,414

CLASS 110

245 4,382,415

CLASS 114

90 4,382,416
102 4,382,417
263 4,382,418
313 4,382,419

CLASS 118

651 4,382,420
663 4,382,421
669 4,382,422

CLASS 119

2 4,382,423
158 4,382,424

CLASS 122

367 R 4,382,425

CLASS 123

41.1 4,382,426
41.74 4,382,427
90.16 4,382,428
330 Re.31,233
425 4,382,429
606 4,382,430
644 4,382,431

CLASS 126

25 A 4,382,432
113 4,382,433
425 4,382,434
429 4,382,435
4,382,436
433 4,382,437

CLASS 127

57 4,382,823

CLASS 128

69 4,382,438
77 4,382,439
201.25 4,382,440
330 4,382,444
402 4,382,446

CLASS 132

33 R 4,382,447
4,382,448

CLASS 134

1 4,382,824
2 4,382,825

CLASS 136

251 4,383,129
261 4,383,130

CLASS 137

38 4,382,449
242 4,382,450
596.16 4,382,451
625.43 4,382,452

CLASS 138

40 4,382,453
140 4,382,454

CLASS 139

439 4,382,455

CLASS 140

123 4,382,456

CLASS 144

2 Z 4,382,457
230 4,382,458

CLASS 145

2 R 4,382,459

CLASS 148

1.5 4,382,826
4,382,827
3 4,382,828
39 4,382,829

CLASS 156

64 4,382,830
94 4,382,831
99 4,382,832
382 4,382,833
4,382,834
384 4,382,835
459 4,382,836
610 4,382,837
616 R 4,382,838
4,382,839
623 R 4,382,840

CLASS 160

236 4,382,460
329 4,382,461

CLASS 164

426 4,382,462

CLASS 165

12 4,382,463
76 4,382,464
95 4,382,465
104.11 4,382,466
159 4,382,467
173 4,382,468

CLASS 166

248 4,382,469
369 4,382,470

CLASS 171

124 4,382,471

CLASS 172

33 4,382,472
4,382,473
179 4,382,474

CLASS 173

91 4,382,475
93.5 4,382,476

CLASS 174

73 R 4,383,131
120 SC 4,383,132
127 4,383,133

CLASS 175

410 4,382,477

CLASS 177

169 4,382,478
189 4,382,479
212 4,382,480

CLASS 179

1 D 4,383,134
1 GS 4,383,136
1 SD 4,383,135
18 ES 4,383,137
84 C 4,383,138
111 R 4,383,139
149 4,383,140

CLASS 180

54 A 4,382,481
69 R 4,382,482
153 4,382,483
165 4,382,484
306 4,382,485

CLASS 181

118 4,382,486
282 4,382,487

CLASS 182

136 4,382,488

CLASS 187

29 R 4,382,489
32 4,382,490

CLASS 188

71.8 4,382,491
4,382,492
73.43 4,382,493
79.5 P 4,382,494

CLASS 190

18 A 4,383,141
49 4,383,142
53 4,383,143

CLASS 192

3.29 4,382,496
36 4,382,495
113 A 4,382,497

CLASS 193

34 4,382,498

CLASS 194

1 L 4,382,499

CLASS 198

346 4,382,500
384 4,382,501
628 4,382,502
774 4,382,503

CLASS 200

5 R 4,383,144
16 D 4,383,145
17 R 4,383,146
50 C 4,383,147
61.54 4,383,148
68 4,383,149
144 AP 4,383,150
148 R 4,383,151
4,383,152
153 J 4,383,153
291 4,383,154
315 4,383,155

CLASS 202

256 4,382,841
263 4,382,842

CLASS 203

19 4,382,843

CLASS 204

14 N 4,382,844
111 4,382,845
157.1 R 4,382,846
159.12 4,382,847
194 4,382,848
258 4,382,849

CLASS 206

44 R 4,382,504
180 4,382,505
200 4,382,506
204 4,382,507
216 4,382,508
331 4,382,509
396 4,382,510
427 4,382,511
446 4,382,512
484 4,382,513
626 4,382,514

CLASS 208

11 R 4,382,850
49 4,382,851
188 4,382,852
4,382,853
216 R 4,382,854
236 4,382,855

CLASS 209

3.3 4,382,515
10 4,382,856
23 4,382,857
136 4,382,858
517 4,382,516

CLASS 210

96.1 4,382,859
431 4,382,860
497.2 4,382,861
668 4,382,862
702 4,382,863
727 4,382,864
743 4,382,865
748 4,382,866
754 4,382,867

CLASS 211

41 4,382,517
192 4,382,518

CLASS 212

195 4,382,519

CLASS 215

21 4,382,520
307 4,382,521

CLASS 219

10.55 B 4,383,156
4,383,157
4,383,158
69 W 4,383,159
4,383,160
4,383,161
100 4,383,162
107 4,383,163
121 LD 4,383,164
121 LN 4,383,165

CLASS 220

337 4,382,522
4,382,523
445 4,382,524
456 4,382,525

CLASS 221

34 4,382,526

CLASS 222

56 4,382,527
367 4,382,528
531 4,382,529
567 4,382,530

CLASS 223

91 4,382,531

CLASS 224

331 4,382,532

CLASS 227

10 4,382,533

CLASS 228

103 4,382,322
161 4,382,534
262 4,382,535

CLASS 229

2.5 EC 4,382,536
39 R 4,382,537
62.5 4,382,538
73 4,382,539

CLASS 232

17 4,382,540
35 4,382,541

4,382,542

CLASS 236

10 4,382,543
46 R 4,382,544
48 R 4,382,545
4,382,546

CLASS 238

303 4,382,547

CLASS 239

56 4,382,548
106 4,382,549
177 4,382,550
265.29 4,382,551
317 4,382,552
533.9 4,382,553
4,382,554
714 4,382,555
715 4,382,556

CLASS 241

1 4,382,557
30 4,382,558
79.3 4,382,559
101.2 4,382,560
121 4,382,561

CLASS 242

84.2 A 4,382,562
107 4,382,563
107.4 A 4,382,564
199 4,382,565

CLASS 244

13 4,382,566
107 4,382,567
136 4,382,568
199 4,382,569

CLASS 248

74 R 4,382,570
235 4,382,571
484 4,382,572
561 4,382,573
641 4,382,574

CLASS 249

93 4,382,575
174 4,382,576

CLASS 250

201 4,383,168
213 VT 4,383,169
216 4,383,170
282 4,383,171
308 4,383,172
330 4,383,173
338 4,383,174
368 4,383,175
396 ML 4,383,176
423 R 4,383,177
441.1 4,383,178
472.1 4,383,179
492.2 4,383,180
573 4,383,181

CLASS 251

43 4,382,577
65 4,382,578
214 4,382,579

CLASS 252

28 4,382,868
47.5 4,382,869
75 4,382,870
174.19 4,382,871
189 4,382,872
312 4,382,873
329 4,382,874
425.3 4,382,875
435 4,382,876
437 4,382,877
4,382,878
457 4,382,879
465 4,382,880
500 4,382,881
503 4,382,882
521 4,382,883
606 4,382,884
635 4,382,885

CLASS 254

89 H 4,382,580
134.3 FT 4,382,581

CLASS 260

107 4,382,886
112.5 R 4,382,887
4,382,888
4,382,889
156 4,382,890
239.3 D 4,382,891
243.3 4,382,892
465 D 4,382,893
4,382,894
505 C 4,382,896
505 P 4,382,895
544 D 4,382,898
544 Y 4,382,897

CLASS 261

39 B 4,382,899
89 4,382,900
114 A 4,382,901

CLASS 264

1.4 4,382,902
12 4,382,903
49 4,382,904
106 Re.31,235
520 4,382,905

CLASS 266

45 4,382,582
77 4,382,583
142 4,382,584
190 4,382,585
259 4,382,586

CLASS 267

160 4,382,587

CLASS 269

43 4,382,588
50 4,382,589
87.2 4,382,590
156 4,382,591

CLASS 270

53 4,382,592

CLASS 271

12 4,382,593
272 4,382,594

CLASS 272

85 4,382,595
118 4,382,596

CLASS 273

1 L 4,382,597
85 D 4,382,598
86 B 4,382,599
118 R 4,382,600
153 S 4,382,601
256 4,382,602

CLASS 280

6 H 4,382,604
6 R 4,382,603
11.22 4,382,605
154.5 R 4,382,606
408 4,382,607
411 A 4,382,608
415 A 4,382,609
610 4,382,610
615 4,382,611
646 4,382,612
756 4,382,613
802 4,382,614
825 4,382,615
4,382,616

CLASS 281

42 4,382,617

CLASS 285

137 R 4,382,618
4,382,619

CLASS 290

43 4,383,182

CLASS 292

92 4,382,620
210 4,382,621
216 4,382,622

CLASS 294

86.32 4,382,623
88 4,382,624
104 4,382,625

CLASS 296

31 P 4,382,626

CLASS 297

124 4,382,627
232 4,382,628
322 4,382,629
362 4,382,630

CLASS 298

17 S 4,382,632
17 SG 4,382,631

CLASS 299

33 4,382,633
37 4,382,634

CLASS 301

37 TP 4,382,635

CLASS 303

6 C 4,382,636

CLASS 307

43 4,383,183
66 4,383,184
108 4,383,185
113 4,383,186
497 4,383,188
529 4,383,189

CLASS 308

6 R 4,382,637
187 4,382,638
189 R 4,382,639

CLASS 310

55 4,383,190
59 4,383,191
154 4,383,192
4,383,193
326 4,383,194
330 4,383,195
358 4,383,196

CLASS 312

5 4,382,640
21 4,382,641
194 4,382,642
195 4,382,643
334 4,382,644

CLASS 313

38 4,383,197
120 4,383,198

CLASS 315

15 4,383,199
57 4,383,200
078 4,383,201
200 A 4,383,202
248 4,383,203
291 4,383,204

CLASS 318

254 4,383,205
445 4,383,206
560 4,383,207
618 4,383,208
696 4,383,209

CLASS 320

2 4,383,210
9 4,383,211
30 4,383,212

CLASS 322

53 4,383,213
58 4,383,214
63 4,383,215

CLASS 323

282 4,383,216

CLASS 324

158 F 4,383,217
225 4,383,218
309 4,383,219
338 4,383,220
439 4,383,221

CLASS 330

9 4,383,222
253 4,383,223

CLASS 331

74 4,383,224

CLASS 333

12 4,383,225
33 4,383,226
121 4,383,227
173 4,383,228
176 4,383,229
214 4,383,230

CLASS 335

146 4,383,231
202 4,383,232
213 4,383,233
253 4,383,234

CLASS 336

200 4,383,235

CLASS 337

403 4,383,236

CLASS 338

21 4,383,237

CLASS 339

7 4,382,647
18 P 4,382,648
39 4,382,649
60 R 4,382,650
92 R 4,382,651
103 M 4,382,652
143 R 4,382,653
176 L 4,382,654

CLASS 340

32 4,383,238
38 R 4,383,239
46 4,383,240
52 F 4,383,241
64 4,383,242
310 R 4,383,243
321 4,383,244
347 AD 4,383,247
347 DA 4,383,245
4,383,248
347 NT 4,383,246
384 R 4,383,249
521 4,383,250
527 4,383,251
606 4,383,252
629 4,383,253
712 4,383,254
764 4,383,255
793 4,383,256
825.47 4,383,257

CLASS 343

5 SC 4,383,258
103 4,383,259
701 4,383,260

CLASS 346

1.1 4,383,261
4,383,262
140 R 4,383,263
4,383,264
4,383,265
155 Re.31,238

CLASS 350

96.12 4,382,655
96.28 4,382,656
295 4,382,657
334 4,382,658
335 4,382,659
353 4,382,660
430 4,382,661
458 4,382,662

CLASS 353

104 4,382,663
111 4,382,664

CLASS 354

25 4,382,665
33 4,382,666
43 4,382,667
121 4,382,668
246 4,382,670
268 4,382,669
286 4,382,671

CLASS 355

1 4,382,672
3 TR 4,382,673
14 CH 4,382,674
70 4,382,675
75 4,382,676
76 4,382,677

CLASS 356

150 4,382,678
237 4,382,679
247 4,382,680
350 4,382,681

CLASS 357

13 4,383,266
30 4,383,267
4,383,269
34 4,383,268
71 4,383,270

CLASS 358

102 Re.31,239
113 4,383,271
136 4,383,272
188 4,383,273
227 4,383,274
258 4,383,277
280 4,383,275
285 4,383,278
341 4,383,279
342 4,383,276

CLASS 360

18 4,383,280
45 4,383,281
96.3 4,383,282
97 4,383,283
125 4,383,284
132 4,383,285

CLASS 361

384 4,383,286

CLASS 362

18 4,383,287
32 4,383,288
33 4,383,289
290 4,383,290
352 4,383,291

CLASS 363

21 4,383,292
25 4,383,293
60 4,383,294

CLASS 364

200 4,383,295
4,383,296
4,383,297
4,383,298
300 4,383,299
434 4,383,300
558 4,383,301
562 4,383,302
565 4,383,303
4,383,304
715 4,383,305
802 4,383,306
900 4,383,307

CLASS 366

25 4,382,682
44 4,382,683
178 4,382,684
241 4,382,685

CLASS 367

31 4,383,308

CLASS 368

10 4,382,688
76 4,382,689
77 4,382,690
157 4,382,691
4,382,692
160 4,382,693
187 4,382,686
4,382,694
220 4,382,695
240 4,382,696
4,382,697
278 4,382,687

CLASS 369

77 4,383,309
136 4,383,310
275 4,383,311

CLASS 370

13 4,383,312
51 4,383,313
86 4,383,314
89 4,383,315
118 4,383,316

CLASS 371

51 4,383,317

CLASS 372

6 4,383,318
45 4,383,319
4,383,320

CLASS 373

88 4,383,321

CLASS 374

37 4,382,698
46 4,382,699
102 4,382,700

CLASS 375

1 4,383,322
4,383,323
76 4,383,324

CLASS 376

247 4,382,906
283 4,382,907
299 4,382,908
381 4,383,325

CLASS 377

2 4,383,167
20 4,383,166
57 4,383,187
61 4,383,326

CLASS 378

19 4,383,327
042 4,383,328
166 4,383,329
187 4,383,330

CLASS 400

124 4,382,701
144.2 4,382,702
257 4,382,703
585 4,382,704
697.1 4,382,705

CLASS 401

67 4,382,706
198 4,382,707

CLASS 402

15 4,382,708

CLASS 403

57 4,382,709
163 Re.31,234
252 4,382,710
290 4,382,711
405 4,382,712

CLASS 404

4 4,382,713
6 4,382,714
133 4,382,715

CLASS 405

60 4,382,716
169 4,382,717
196 4,382,718
259 4,382,719
269 4,382,720
288 4,382,721
291 4,382,722

CLASS 406

90 4,382,723
130 4,382,724
131 4,382,725

CLASS 408

197 4,382,726

CLASS 409

105 4,382,727
137 4,382,728
178 4,382,729
233 4,382,730
248 4,382,731
304 4,382,732

CLASS 410

49 4,382,733
70 4,382,734
4,382,735
104 4,382,736

CLASS 413

56 4,382,737

CLASS 414

22 4,382,738
217 4,382,739
293 4,382,740
403 4,382,741
439 4,382,742
692 4,382,743
712 4,382,744

CLASS 415

1 4,382,745
202 4,382,746
207 4,382,747

CLASS 417

11 4,382,748
295 4,382,749
397 4,382,750
462 4,382,751
479 4,382,753
516 4,382,752

CLASS 418

55 4,382,754
61 A 4,382,755
133 4,382,756

CLASS 419

11 4,382,818

CLASS 420

588 4,382,909

CLASS 422

62 4,382,910

CLASS 423

175 4,382,911
224 4,382,912
230 4,382,913
243 Re.31,236
300 4,382,914
415 A 4,382,915
481 4,382,916
561 B 4,382,917
573 R 4,382,918

CLASS 424

65 4,382,919
177 4,382,920
4,382,921
4,382,922
4,382,923
180 4,382,924
4,382,925
181 4,382,926
200 4,382,927
211 4,382,928
246 4,382,929
4,382,931
4,382,932

248.4 4,382,933
248.54 Re.31,237
4,382,930
250 4,382,934
4,382,935
256 4,382,936
4,382,937
4,382,938
4,382,939
261 4,382,940
263 4,382,941
4,382,942
267 4,382,943
269 4,382,944
273 P 4,382,947
4,382,948
273 R 4,382,945
4,382,946
274 4,382,949
4,382,950
275 4,382,951
279 4,382,952
285 4,382,953
4,382,954
309 4,382,955
322 4,382,956
327 4,382,957
330 4,382,958
331 4,382,959
358 4,382,960
364 4,382,961
365 4,382,765

CLASS 425

4 R 4,382,757
82.1 4,382,758
115 4,382,759
139 4,382,760
140 4,382,761
142 4,382,762
153 4,382,763
4,382,764
465 4,382,766
504 4,382,767
510 4,382,768
525 4,382,769

CLASS 426

3 4,382,962
4,382,963
7 4,382,964
4,382,965
69 4,382,966
96 4,382,967
249 4,382,968
272 4,382,969
275 4,382,970
323 4,382,971
536 4,382,972
614 4,382,973

CLASS 427

5 4,382,974
8 4,382,975
34 4,382,976
41 4,382,985
42 4,382,977
53.1 4,382,978
68 4,382,979
77 4,382,980
105 4,382,981
130 4,382,982
386 4,382,983
391 4,382,984

CLASS 428

88 4,382,986
212 4,382,987
222 4,382,988
280 4,382,989
290 4,382,990
373 4,382,992
391 4,382,991
395 4,382,993
411 4,382,994
415 4,382,995
442 4,382,996
446 4,382,997
450 4,382,998
494 4,382,999
522 4,383,000
4,383,001
580 4,383,002
611 4,383,003
619 4,383,004
625 4,383,005
659 4,383,006

CLASS 429

1 4,383,007
38 4,383,008
39 4,383,009
42 4,383,010
54 4,383,011
101 4,383,012
112 4,383,013
4,383,014
206 4,383,015

CLASS 430

5 4,383,016
7 4,383,017
14 4,383,018
45 4,383,019
127 4,383,020
213 4,383,021
228 4,383,022
264 4,383,023
271 4,383,024
280 4,383,025
325 4,383,026
372 4,383,027
483 4,383,028
541 4,383,029
599 4,383,030

CLASS 431

26 4,382,770
158 4,382,771
189 4,382,772
264 4,382,773
359 4,382,774
362 4,382,775

CLASS 432

9 4,382,776
15 4,382,777
18 4,382,778
25 4,382,779

CLASS 433

5 4,382,780
17 4,382,781
18 4,382,782
19 4,382,783
26 4,382,784
36 4,382,785
64 4,382,787
77 4,382,788
85 4,382,786
89 4,382,789
126 4,382,790
172 4,382,791
217 4,382,792

CLASS 434

112 4,382,793
193 4,382,794
258 4,382,795

CLASS 435

7 4,383,031
23 4,383,032
68 4,383,033
70 4,383,034
4,383,035
4,383,036
78 4,383,037
107 4,383,038
4,383,039
161 4,383,040
291 4,383,041

CLASS 436

5 4,383,042
74 4,383,043

CLASS 440

51 4,382,796
53 4,382,797

CLASS 445

41 4,382,646
69 4,382,645

CLASS 455

24 4,383,331
33 4,383,332
182 4,383,333
295 4,383,334

CLASS 501

108 4,383,044
109 4,383,045

CLASS 521

26 4,383,046
28 4,383,047
85 4,383,048
135 4,383,049
174 4,383,050
176 4,383,051

CLASS 523

118 4,383,052
122 4,383,053
131 4,383,054
221 4,383,055
328 4,383,056
333 4,383,057
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